NODE=S086

B_s^0

$I(J^P) = 0(0^-)$

NODE=S086

I, J, P need confirmation. Quantum numbers shown are quark-model predictions.

B_s^0 MASS

NODE=S086M

NODE=S086M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
5366.93± 0.10 OUR FIT					
5366.91± 0.11 OUR AVERAGE					
5366.98± 0.07±0.13		[1] AAIJ	21C	LHCB	pp at 7, 8, 13 TeV
5366.85± 0.19±0.13		[2] AAIJ	19U	LHCB	pp at 7, 8, 13 TeV
5366.83± 0.25±0.27		[3] AAIJ	18AC	LHCB	pp at 7, 8, 13 TeV
5367.08± 0.38±0.15	128	[4] AAIJ	16U	LHCB	pp at 7, 8 TeV
5366.90± 0.28±0.23		[5] AAIJ	12E	LHCB	pp at 7 TeV
5364.4 ± 1.3 ±0.7		LOUVOT	09	BELL	$e^+e^- \to \Upsilon(5S)$
5366.01± 0.73±0.33		[6] ACOSTA	06	CDF	$p\overline{p}$ at 1.96 TeV
5369.9 ± 2.3 ±1.3	32	[7] ABE	96B	CDF	$p\overline{p}$ at 1.8 TeV
5374 ±16 ±2	3	ABREU	94D	DLPH	$e^+e^- \to Z$
5359 ±19 ±7	1	[7] AKERS	94J	OPAL	$e^+e^- \to Z$
5368.6 ± 5.6 ±1.5	2	BUSKULIC	93G	ALEP	$e^+e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
5370 ± 1 ±3		DRUTSKOY	07A	BELL	Repl. by LOUVOT 09
5370 ±40	6	[8] AKERS	94J	OPAL	$e^+e^- \to Z$
5383.3 ± 4.5 ±5.0	14	ABE	93F	CDF	Repl. by ABE 96B

OCCUR=2

[1] Uses $B_s^0 \to J/\psi \pi^+\pi^- K^+K^-$ decays. NODE=S086M;LINKAGE=F

[2] Uses $B_s^0 \to J/\psi p\overline{p}$ decays. NODE=S086M;LINKAGE=E

[3] Uses $B_s \to \chi_{c1} K^+K^-$ mode. NODE=S086M;LINKAGE=D

[4] Uses $J/\psi \to \mu^+\mu^-$, $\phi \to K^+K^-$ decays, and observes 128 ± 13 events of $B_s^0 \to J/\psi\phi\phi$. NODE=S086M;LINKAGE=C

[5] Uses $B_s^0 \to J/\psi\phi$ fully reconstructed decays. NODE=S086M;LINKAGE=AA

[6] Uses exclusively reconstructed final states containing a $J/\psi \to \mu^+\mu^-$ decays. NODE=S086M;LINKAGE=AT

[7] From the decay $B_s \to J/\psi(1S)\phi$. NODE=S086M;LINKAGE=A

[8] From the decay $B_s \to D_s^-\pi^+$. NODE=S086M;LINKAGE=B

$m_{B_s^0} - m_B$

NODE=S086DM

m_B is the average of our B masses $(m_{B^\pm}+m_{B^0})/2$.

NODE=S086DM

NODE=S086DM

VALUE (MeV)	CL%	DOCUMENT ID		TECN	COMMENT
87.37±0.12 OUR FIT					
87.42±0.24 OUR AVERAGE					
87.60±0.44±0.09		[1] AAIJ	15U	LHCB	pp at 7, 8 TeV
87.42±0.30±0.09		[2] AAIJ	12E	LHCB	pp at 7 TeV
86.64±0.80±0.08		[3] ACOSTA	06	CDF	$p\overline{p}$ at 1.96 TeV
• • • We use the following data for averages but not for fits. • • •					
89.7 ±2.7 ±1.2		ABE	96B	CDF	$p\overline{p}$ at 1.8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
80 to 130	68	LEE-FRANZINI	90	CSB2	$e^+e^- \to \Upsilon(5S)$

NOTFITTED

[1] The reported result is $m_{B_s^0} - m_{B^0} = 87.45 \pm 0.44 \pm 0.09$ MeV. We convert it to the mass difference with respect to the average of $(m_{B^\pm} + m_{B^0})/2$. Uses the mode $B_s^0 \to \psi(2S)K^-\pi^+$. NODE=S086DM;LINKAGE=B

[2] The reported result is $m_{B_s^0} - m_{B^+} = 87.52 \pm 0.30 \pm 0.12$ MeV. We convert it to the mass difference with respect to the average of $(m_{B^\pm} + m_{B^0})/2$. NODE=S086DM;LINKAGE=AA

[3] The reported result is $m_{B_s^0} - m_{B^0} = 86.38 \pm 0.90 \pm 0.06$ MeV. We convert it to the mass difference with respect to the average of $(m_{B^\pm} + m_{B^0})/2$. NODE=S086DM;LINKAGE=AS

$m_{B^0_{sH}} - m_{B^0_{sL}}$ NODE=S086214

See the B^0_s-$\overline{B}^0_s$ MIXING section near the end of these B^0_s Listings. NODE=S086214

NODE=S086214

B^0_s MEAN LIFE NODE=S086T

The mean B^0_s lifetime is defined and computed as $1/\Gamma_{B^0_s}$, where $\Gamma_{B^0_s}$ is the average decay width of the B^0_s mass eigenstates. NODE=S086T

NODE=S086T

VALUE (10^{-12} s)	EVTS	DOCUMENT ID	TECN	COMMENT	
1.515±0.006 OUR EVALUATION		(Produced by HFLAV)			→ UNCHECKED ←
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.518\pm0.041\pm0.027$		[1] AALTONEN 11AP	CDF	$p\overline{p}$ at 1.96 TeV	
$1.398\pm0.044\,^{+0.028}_{-0.025}$		[2] ABAZOV 06V	D0	$p\overline{p}$ at 1.96 TeV	
$1.42\,^{+0.14}_{-0.13}\pm0.03$		[3] ABREU 00Y	DLPH	$e^+e^- \rightarrow Z$	
$1.53\,^{+0.16}_{-0.15}\pm0.07$		[4] ABREU,P 00G	DLPH	$e^+e^- \rightarrow Z$	
$1.36\pm0.09\,^{+0.06}_{-0.05}$		[5] ABE 99D	CDF	$p\overline{p}$ at 1.8 TeV	
$1.72\,^{+0.20}_{-0.19}\,^{+0.18}_{-0.17}$		[6] ACKERSTAFF 98F	OPAL	$e^+e^- \rightarrow Z$	
$1.50\,^{+0.16}_{-0.15}\pm0.04$		[5] ACKERSTAFF 98G	OPAL	$e^+e^- \rightarrow Z$	
$1.47\pm0.14\pm0.08$		[4] BARATE 98C	ALEP	$e^+e^- \rightarrow Z$	OCCUR=2
1.51 ± 0.11		[7] BARATE 98C	ALEP	$e^+e^- \rightarrow Z$	OCCUR=3
$1.56\,^{+0.29}_{-0.26}\,^{+0.08}_{-0.07}$		[5] ABREU 96F	DLPH	Repl. by ABREU 00Y	
$1.65\,^{+0.34}_{-0.31}\pm0.12$		[4] ABREU 96F	DLPH	Repl. by ABREU 00Y	OCCUR=2
$1.76\pm0.20\,^{+0.15}_{-0.10}$		[8] ABREU 96F	DLPH	Repl. by ABREU 00Y	OCCUR=3
$1.60\pm0.26\,^{+0.13}_{-0.15}$		[9] ABREU 96F	DLPH	Repl. by ABREU,P 00G	OCCUR=4
1.67 ± 0.14		[10] ABREU 96F	DLPH	$e^+e^- \rightarrow Z$	OCCUR=5
$1.61\,^{+0.30}_{-0.29}\,^{+0.18}_{-0.16}$	90	[4] BUSKULIC 96E	ALEP	Repl. by BARATE 98C	
$1.54\,^{+0.14}_{-0.13}\pm0.04$		[5] BUSKULIC 96M	ALEP	$e^+e^- \rightarrow Z$	OCCUR=2
$1.42\,^{+0.27}_{-0.23}\pm0.11$	76	[5] ABE 95R	CDF	Repl. by ABE 99D	
$1.74\,^{+1.08}_{-0.69}\pm0.07$	8	[11] ABE 95R	CDF	Sup. by ABE 96N	OCCUR=2
$1.54\,^{+0.25}_{-0.21}\pm0.06$	79	[5] AKERS 95G	OPAL	Repl. by ACKERSTAFF 98G	
$1.59\,^{+0.17}_{-0.15}\pm0.03$	134	[5] BUSKULIC 95O	ALEP	Sup. by BUSKULIC 96M	
0.96 ± 0.37	41	[12] ABREU 94E	DLPH	Sup. by ABREU 96F	
$1.92\,^{+0.45}_{-0.35}\pm0.04$	31	[5] BUSKULIC 94C	ALEP	Sup. by BUSKULIC 95O	
$1.13\,^{+0.35}_{-0.26}\pm0.09$	22	[5] ACTON 93H	OPAL	Sup. by AKERS 95G	

[1] AALTONEN 11AP combines the fully reconstrcuted $B^0_s \rightarrow D^-_s\pi^+$ decays and partially reconstructed $B^0_s \rightarrow D_s X$ decays. NODE=S086T;LINKAGE=AA

[2] Measured using $D_s\mu^+$ vertices. NODE=S086T;LINKAGE=BZ

[3] Uses $D^-_s\ell^+$, and $\phi\ell^+$ vertices. NODE=S086T;LINKAGE=LZ

[4] Measured using D_s hadron vertices. NODE=S086T;LINKAGE=F

[5] Measured using $D^-_s\ell^+$ vertices. NODE=S086T;LINKAGE=C

[6] ACKERSTAFF 98F use fully reconstructed $D^-_s \rightarrow \phi\pi^-$ and $D^-_s \rightarrow K^{*0}K^-$ in the inclusive B^0_s decay. NODE=S086T;LINKAGE=K

[7] Combined results from $D^-_s\ell^+$ and D_s hadron. NODE=S086T;LINKAGE=K6

[8] Measured using $\phi\ell$ vertices. NODE=S086T;LINKAGE=G

[9] Measured using inclusive D_s vertices. NODE=S086T;LINKAGE=H

[10] Combined result for the four ABREU 96F methods. NODE=S086T;LINKAGE=I

[11] Exclusive reconstruction of $B_s \rightarrow \psi\phi$. NODE=S086T;LINKAGE=D

[12] ABREU 94E uses the flight-distance distribution of D_s vertices, ϕ-lepton vertices, and $D_s\mu$ vertices. NODE=S086T;LINKAGE=B

$\Gamma_{B^0_s}$

NODE=S086GS

"OUR EVALUATION" includes the measurements of $\Gamma_{B^0_s}$ and $\Delta\Gamma_{B^0_s}$ listed in this section, as well as constraints from effective lifetimes with pure *CP* modes and flavor-specific modes.

NODE=S086GS

NODE=S086GS

VALUE (10^{12} s^{-1})	*DOCUMENT ID*		*TECN*	*COMMENT*
0.6600±0.0024 OUR EVALUATION	(Produced by HFLAV)			
0.6617±0.0026 OUR AVERAGE	Error includes scale factor of 2.0. See the ideogram below. [$(0.6611 \pm 0.0028) \times 10^{12}$ s^{-1} OUR 2025 AVERAGE Scale factor = 2.0]			
$0.6613 \pm 0.0015 \pm 0.0034$	[1] HAYRAPETY...	26A	CMS	pp at 13 TeV
$0.6527 ^{+0.0013}_{-0.0015} \pm 0.0022$	[2] AAIJ	24A	LHCB	pp at 13 TeV
$0.6687 \pm 0.0015 \pm 0.0022$	[3,4] AAD	21AE	ATLS	pp at 13 TeV
$0.608 \pm 0.018 \pm 0.012$	[5] AAIJ	21AN	LHCB	pp at 7, 8 TeV
$0.650 \pm 0.006 \pm 0.004$	[6] AAIJ	17V	LHCB	pp at 7, 8 TeV
$0.676 \pm 0.004 \pm 0.004$	[4,7] AAD	16AP	ATLS	pp at 8 TeV
$0.668 \pm 0.011 \pm 0.006$	[8] AAIJ	16AK	LHCB	pp at 7, 8 TeV
$0.6704 \pm 0.0043 \pm 0.0055$	[4] KHACHATRY...	16S	CMS	pp at 8 TeV
$0.6603 \pm 0.0027 \pm 0.0015$	[9] AAIJ	15I	LHCB	pp at 7, 8 TeV
$0.677 \pm 0.007 \pm 0.004$	[4] AAD	14U	ATLS	pp at 7 TeV
$0.654 \pm 0.008 \pm 0.004$	[4] AALTONEN	12AJ	CDF	$p\overline{p}$ at 1.96 TeV
$0.693 ^{+0.018}_{-0.017}$	[4] ABAZOV	12D	D0	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.6531 \pm 0.0042 \pm 0.0026$	[4,10] SIRUNYAN	21E	CMS	Repl. by HAYRAPETYAN 26A
0.6563 ± 0.0021	[4,11] AAIJ	19Q	LHCB	Repl. by AAIJ 24A
$0.661 \pm 0.004 \pm 0.006$	[12] AAIJ	13AR	LHCB	Repl. by AAIJ 15I
$0.677 \pm 0.007 \pm 0.004$	[4] AAD	12CV	ATLS	Repl. by AAD 14U
$0.657 \pm 0.009 \pm 0.008$	[4] AAIJ	12D	LHCB	Repl. by AAIJ 13AR
$0.654 \pm 0.011 \pm 0.005$	[4,13] AALTONEN	12D	CDF	Repl. by AALTONEN 12AJ
$0.672 \pm 0.027 \pm 0.013$	[4] ABAZOV	09E	D0	Repl. by ABAZOV 08AM
$0.658 \pm 0.017 \pm 0.009$	[4,14] AALTONEN	08J	CDF	Repl. by AALTONEN 12D
$0.658 \pm 0.022 \pm 0.004$	[4] ABAZOV	08AM	D0	Repl. by ABAZOV 12D
$0.658 \pm 0.035 ^{+0.0130}_{-0.004}$	[4,14] ABAZOV	07	D0	Repl. by ABAZOV 09E
$0.714 ^{+0.007}_{-0.008} \pm 0.010$	[4,14] ACOSTA	05	CDF	Repl. by AALTONEN 08J

→ UNCHECKED ←
NEW

OCCUR=2

[1] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm. NODE=S086GS;LINKAGE=I

[2] Reports $\Gamma_s - \Gamma_d = -0.0056 ^{+0.0013}_{-0.0015} \pm 0.0014$ ps^{-1} using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays and the current B^0 lifetime of 1.517 ± 0.004 ps^{-1}. NODE=S086GS;LINKAGE=D

[3] Reports a combination of $0.6703 \pm 0.0014 \pm 0.0018$ ps^{-1} with AAD 16AP. NODE=S086GS;LINKAGE=E

[4] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086GS;LINKAGE=JP

[5] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with $J/\psi \to e^+ e^-$. NODE=S086GS;LINKAGE=C

[6] Measured using time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ in the region $m(KK) > 1.05$ GeV. NODE=S086GS;LINKAGE=A

[7] Reports a combination of $0.675 \pm 0.003 \pm 0.003$ ps^{-1} with AAD 14U. NODE=S086GS;LINKAGE=G

[8] Measured using a time-dependent angular analysis of $B^0_s \to \psi(2S)\phi$ decays. NODE=S086GS;LINKAGE=PP

[9] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays. NODE=S086GS;LINKAGE=JK

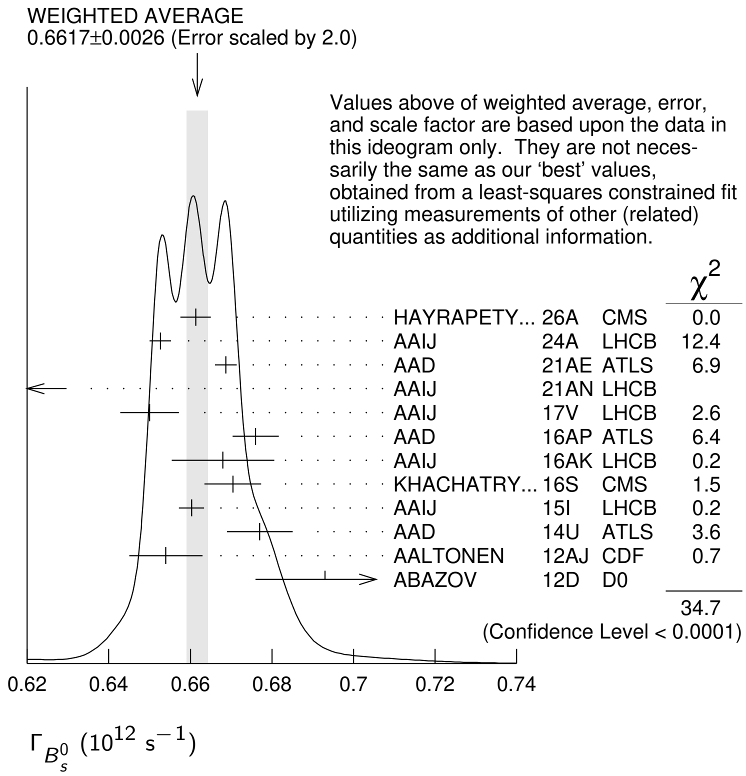
[10] Reports a combination of $0.6590 \pm 0.0032 \pm 0.0023$ ps^{-1} with KHACHATRYAN 16S. NODE=S086GS;LINKAGE=F

[11] Reports $\Gamma_s - \Gamma_d = -0.0041 \pm 0.0024 \pm 0.0015$ ps^{-1} using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays and the B^0 lifetime of 1.520 ± 0.004 ps^{-1}. The results are further combined with those coming from $B^0_s \to J/\psi \pi^+ \pi^-$, $B^0_s \to \psi(2S)\phi$, and $B^0_s \to D^+_s D^-_s$. NODE=S086GS;LINKAGE=H

[12] Measured using a combined time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ and $B^0_s \to J/\psi \pi^+ \pi^-$ decays. NODE=S086GS;LINKAGE=AI

[13] Assuming CPV phase $\phi_s = -0.04$. NODE=S086GS;LINKAGE=PH

[14] Assuming CPV phase $\phi_s = 0$. NODE=S086GS;LINKAGE=P0



$\Delta\Gamma_{B^0_s}$

NODE=S086DGS

"OUR EVALUATION" includes the measurements of $\Gamma_{B^0_s}$ and $\Delta\Gamma_{B^0_s}$ listed in this section, as well as constraints from effective lifetimes with pure *CP* modes and flavor-specific modes.

NODE=S086DGS

NODE=S086DGS

VALUE (10^{12} s^{-1})	*DOCUMENT ID*	*TECN*	*COMMENT*
0.0783±0.0035 OUR EVALUATION	(Produced by HFLAV)		
0.0776±0.0034 OUR AVERAGE	Error includes scale factor of 1.3. See the ideogram below. [(0.080 ± 0.005) × 10^{12} s^{-1} OUR 2025 AVERAGE Scale factor = 1.5]		
0.0761±0.0040±0.0024	[1,2] HAYRAPETY... 26A	CMS	pp at 13 TeV
0.0845±0.0044±0.0024	[3] AAIJ 24A	LHCB	pp at 13 TeV
0.087 ±0.012 ±0.009	[4] AAIJ 24O	LHCB	pp at 7, 8, 13 TeV
0.0607±0.0047±0.0043	[5,6] AAD 21AE	ATLS	pp at 13 TeV
0.115 ±0.045 ±0.011	[7] AAIJ 21AN	LHCB	pp at 7, 8 TeV
0.066 ±0.018 ±0.010	[8] AAIJ 17V	LHCB	pp at 7, 8 TeV
0.101 ±0.013 ±0.007	[5,9] AAD 16AP	ATLS	pp at 8 TeV
0.066 $^{+0.041}_{-0.044}$ ±0.007	[10] AAIJ 16AK	LHCB	pp at 7, 8 TeV
0.095 ±0.013 ±0.007	[5] KHACHATRY... 16S	CMS	pp at 8 TeV
0.0805±0.0091±0.0032	[3] AAIJ 15I	LHCB	pp at 7, 8 TeV
0.053 ±0.021 ±0.010	[5] AAD 14U	ATLS	pp at 7 TeV
0.068 ±0.026 ±0.009	[5] AALTONEN 12AJ	CDF	$p\overline{p}$ at 1.96 TeV
0.163 $^{+0.065}_{-0.064}$	[5,11] ABAZOV 12D	D0	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.114 ±0.014 ±0.007	[5,12] SIRUNYAN 21E	CMS	Repl. by HAYRAPETYAN 26A
0.077 ±0.008 ±0.003	[3] AAIJ 19Q	LHCB	Repl. by AAIJ 24A
0.106 ±0.011 ±0.007	[13] AAIJ 13AR	LHCB	Repl. by AAIJ 15I
0.053 ±0.021 ±0.010	[5] AAD 12CV	ATLS	Repl. by AAD 14U
0.123 ±0.029 ±0.011	[5] AAIJ 12D	LHCB	Repl. by AAIJ 13AR
0.075 ±0.035 ±0.006	[14] AALTONEN 12D	CDF	Repl. by AALTONEN 12AJ
0.085 $^{+0.072}_{-0.078}$ ±0.001	[15] ABAZOV 09E	D0	Repl. by ABAZOV 08AM
0.076 $^{+0.059}_{-0.063}$ ±0.006	[16] AALTONEN 08J	CDF	Repl. by AALTONEN 12D

→ UNCHECKED ←
NEW

OCCUR=3

OCCUR=2

0.19	± 0.07	$^{+0.02}_{-0.01}$	[5,17] ABAZOV	08AM	D0	Repl. by ABAZOV 12D
0.12	$^{+0.08}_{-0.10}$	± 0.02	[16,18] ABAZOV	07	D0	Repl. by ABAZOV 07N
0.13	± 0.09		[19] ABAZOV	07N	D0	Repl. by ABAZOV 09E
0.47	$^{+0.19}_{-0.24}$	± 0.01	[16] ACOSTA	05	CDF	Repl. by AALTONEN 08J

[1] Measured using a time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm. NODE=S086DGS;LINKAGE=L

[2] Reports a combination of 0.0780 ± 0.0045 ps^{-1} with KHACHATRYAN 16S. NODE=S086DGS;LINKAGE=M

[3] Measured using time-dependent angular analysis of $B_s^0 \to J/\psi K^+ K^-$ decays. NODE=S086DGS;LINKAGE=C

[4] Measured using CP eigenstates $B_s^0 \to J/\psi\eta'$ and $B_s^0 \to J/\psi\pi^+\pi^-$ (selected to be predominantly CP-odd). Negligible CP violation and $\Gamma_{B_s^0} = 0.6628 \pm 0.0035$ ps^{-1} are assumed. NODE=S086DGS;LINKAGE=J

[5] Measured using the time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays. NODE=S086DGS;LINKAGE=AJ

[6] Reports a combination of $0.0657 \pm 0.0043 \pm 0.0037$ ps^{-1} with AAD 16AP NODE=S086DGS;LINKAGE=F

[7] Measured using a time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays with $J/\psi \to e^+ e^-$. NODE=S086DGS;LINKAGE=E

[8] Measured using time-dependent angular analysis of $B_s^0 \to J/\psi K^+ K^-$ in the region m$(K K) > 1.05$ GeV. NODE=S086DGS;LINKAGE=D

[9] Reports a combination pf $0.066^{+0.041}_{-0.044} \pm 0.007$ ps^{-1} with AAD 14U. NODE=S086DGS;LINKAGE=I

[10] Measured using time-dependent angular analysis of $B_s^0 \to \psi(2S)\phi$ decays. NODE=S086DGS;LINKAGE=A

[11] The error includes both statistical and systematic uncertainties. NODE=S086DGS;LINKAGE=CE

[12] Reports a combination of $0.1032 \pm 0.0095 \pm 0.0048$ ps^{-1} with KHACHATRYAN 16S. NODE=S086DGS;LINKAGE=G

[13] AAIJ 13AR result comes from a combined fit to $B_s^0 \to J/\psi K^+ K^-$ and $B_s^0 \to J/\psi\pi^+\pi^-$ data sets. Also reports $\Delta\Gamma_s = 0.100 \pm 0.016 \pm 0.003$ ps^{-1} from a fit to $B_s^0 \to J/\psi K^+ K^-$ decays. NODE=S086DGS;LINKAGE=AR

[14] Uses the time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays and assuming CP-violating angle $\beta_s(B^0 \to J/\psi\phi) = 0.02$. NODE=S086DGS;LINKAGE=AT

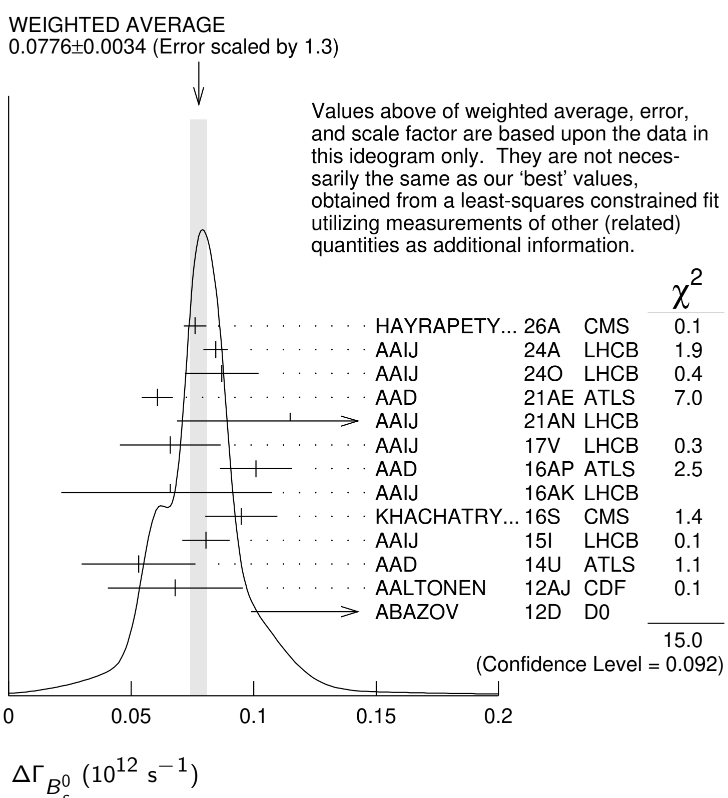
[15] Measured the angular and lifetime parameters for the time-dependent angular untagged decays $B_d^0 \to J/\psi K^{*0}$ and $B_s^0 \to J/\psi\phi$. NODE=S086DGS;LINKAGE=AB

[16] Measured using the time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays and assuming CP-violating phase $\phi_s = 0$. NODE=S086DGS;LINKAGE=AC

[17] Obtaines 90% CL interval $-0.06 < \Delta\Gamma_s < 0.30$. NODE=S086DGS;LINKAGE=ZV

[18] ABAZOV 07 reports $0.17 \pm 0.09 \pm 0.02$ with CP-violating phase ϕ_s as a free parameter. NODE=S086DGS;LINKAGE=BZ

[19] Combines D^0 measurements of time-dependent angular distributions in $B_s^0 \to J/\psi\phi$ and charge asymmetry in semileptonic decays. There is a 4-fold ambiguity in the solution. NODE=S086DGS;LINKAGE=ZO



$\Delta\Gamma_{B^0_s}/\Gamma_{B^0_s}$

NODE=S086DRA

$\Gamma_{B^0_s}$ and $\Delta\Gamma_{B^0_s}$ are the decay rate average and difference between two B^0_s CP eigenstates (light − heavy). "OUR EVALUATION" is derived from the averages of $\Gamma_{B^0_s}$ and $\Delta\Gamma_{B^0_s}$ (and their correlation).

NODE=S086DRA

NODE=S086DRA

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.118±0.006 OUR EVALUATION		(Produced by HFLAV)			
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.090\pm0.009\pm0.023$		[1] ESEN	13	BELL	$e^+e^- \to \Upsilon(5S)$
		[2] AAIJ	12D	LHCB	pp at 7 TeV
		[3] AALTONEN	12D	CDF	$p\overline{p}$ at 1.96 TeV
		[4] ABAZOV	12D	D0	$p\overline{p}$ at 1.96 TeV
$0.147^{+0.036}_{-0.030}{}^{+0.042}_{-0.041}$		[1] ESEN	10	BELL	$e^+e^- \to \Upsilon(5S)$
$0.072\pm0.021\pm0.022$		[5] ABAZOV	09I	D0	$p\overline{p}$ at 1.96 TeV
>0.012	95	[5] AALTONEN	08F	CDF	$p\overline{p}$ at 1.96 TeV
$0.116^{+0.09}_{-0.10}\pm0.010$		[6] AALTONEN	08J	CDF	Repl. by AALTONEN 12D
$0.079^{+0.038}_{-0.035}{}^{+0.031}_{-0.030}$		[5] ABAZOV	07Y	D0	Repl. by ABAZOV 09I
$0.24\ {}^{+0.28}_{-0.38}\ {}^{+0.03}_{-0.04}$		[6,7] ABAZOV	05W	D0	Repl. by ABAZOV 08AM
$0.65\ {}^{+0.25}_{-0.33}\pm0.01$		[6] ACOSTA	05	CDF	Repl. by AALTONEN 08J
<0.46	95	[8] ABREU	00Y	DLPH	$e^+e^- \to Z$
<0.69	95	[9] ABREU,P	00G	DLPH	$e^+e^- \to Z$
$0.25\ {}^{+0.21}_{-0.14}$		[10] BARATE	00K	ALEP	$e^+e^- \to Z$
<0.83	95	[11] ABE	99D	CDF	$p\overline{p}$ at 1.8 TeV
<0.67	95	[12] ACCIARRI	98S	L3	$e^+e^- \to Z$

NODE=S086DRA
→ UNCHECKED ←

[1] Assumes CP violation is negligible. NODE=S086DRA;LINKAGE=ES

[2] Measured using the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086DRA;LINKAGE=AJ

[3] Uses the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays and assuming CP-violating angle $\beta_s(B^0 \to J/\psi\phi) = 0.02$. NODE=S086DRA;LINKAGE=AT

[4] Measured using fully reconstructed $B_s \to J/\psi\phi$ decays. NODE=S086DRA;LINKAGE=CE

[5] Assumes 2 B($B^0_s \to D^{(*)}_s D^{(*)}_s$) $\simeq \Delta\Gamma^{CP}_s / \Gamma_s$. NODE=S086DRA;LINKAGE=AD

[6] Measured using the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086DRA;LINKAGE=AC

[7] Uses $|A_0|^2 - |A_{||}|^2$=0.355 ± 0.066 from ACOSTA 05. NODE=S086DRA;LINKAGE=AZ

[8] Uses $D^-_s\,\ell^+$, and $\phi\ell^+$ vertices. NODE=S086DRA;LINKAGE=LZ

[9] Measured using D_s hadron vertices. NODE=S086DRA;LINKAGE=H

[10] Uses $\phi\phi$ correlations from $B^0_s \to D^{(*)+}_s D^{(*)-}_s$. NODE=S086DRA;LINKAGE=KB

[11] ABE 99D assumes $\tau_{B^0_s}$= 1.55 ± 0.05 ps. NODE=S086DRA;LINKAGE=B

[12] ACCIARRI 98S assumes $\tau_{B^0_s}$= 1.49 ± 0.06 ps and PDG 98 values of b production fraction. NODE=S086DRA;LINKAGE=A

B^0_{sH} MEAN LIFE

NODE=S086TSH

B^0_{sH} is the heavy mass state of two B^0_s CP eigenstates.

NODE=S086TSH

NODE=S086TSH

VALUE (10^{-12} s)	DOCUMENT ID		TECN	COMMENT
1.611±0.008 OUR EVALUATION	(Produced by HFLAV)			
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.59\ \pm0.07\ \pm0.03$	[1] HAYRAPETY...	24AX	CMS	pp at 13 TeV
$0.99\ {}^{+0.42}_{-0.07}\pm0.17$	[2] AAD	23BY	ATLS	pp at 13 TeV
$1.83\ {}^{+0.23}_{-0.20}\pm0.04$	[2] TUMASYAN	23A	CMS	pp at 13 TeV
$2.07\ \pm0.29\ \pm0.03$	[2] AAIJ	22	LHCB	pp at 7, 8, 13 TeV
$1.70\ {}^{+0.60}_{-0.43}\pm0.09$	[2] SIRUNYAN	20AG	CMS	pp at 7, 8, 13 TeV
$1.677\pm0.034\pm0.011$	[3] SIRUNYAN	18BY	CMS	pp at 8 TeV
$2.04\ \pm0.44\ \pm0.05$	[2] AAIJ	17AI	LHCB	pp at 7, 8, 13 TeV
$1.70\ \pm0.14\ \pm0.05$	[4] ABAZOV	16C	D0	$p\overline{p}$ at 1.96 TeV

→ UNCHECKED ←

1.75 $\pm$0.12 $\pm$0.07	[1] AAIJ	13AB	LHCB	pp at 7 TeV
1.652$\pm$0.024$\pm$0.024	[5] AAIJ	13AR	LHCB	pp at 7 TeV
1.700$\pm$0.040$\pm$0.026	[6] AAIJ	12AN	LHCB	pp at 7 TeV
	[7] AALTONEN	12D	CDF	$p\overline{p}$ at 1.96 TeV
1.70 $^{+0.12}_{-0.11}$ $\pm$0.03	[6] AALTONEN	11AB	CDF	$p\overline{p}$ at 1.96 TeV
1.613$^{+0.123}_{-0.113}$	[8,9] AALTONEN	08J	CDF	Repl. by AALTONEN 12D
1.58 $^{+0.39}_{-0.42}$ $^{+0.01}_{-0.02}$	[9] ABAZOV	05W	D0	Repl. by ABAZOV 08AM
2.07 $^{+0.58}_{-0.46}$ $\pm$0.03	[9] ACOSTA	05	CDF	Repl. by AALTONEN 08J

[1] Measured using a pure CP-odd final state $J/\psi K^0_S$ with the assumption that contributions from penguin diagrams are small. NODE=S086TSH;LINKAGE=A

[2] Measured using $B_s \to \mu^+\mu^-$ decays which, in the Standard Model, correspond to B^0_{sH} decays. Assumes -2 Re(λ)/(1 + $|\lambda|^2$) = 1. NODE=S086TSH;LINKAGE=D

[3] Measured using $B^0_s \to J/\psi\pi^+\pi^-$ decays with 0.9240 < m($\pi\pi$) < 1.0204 GeV, which is dominated by the f_0(980) resonance, making it a CP-odd state. NODE=S086TSH;LINKAGE=E

[4] Measured using $J/\psi\pi^+\pi^-$ mode with 0.880 < $m(\pi\pi)$ < 1.080 GeV/c^2, which is mostly $J/\psi f(0)(980)$ mode, a pure CP-odd final state. NODE=S086TSH;LINKAGE=B

[5] Measured using $B_s \to J/\psi\pi^+\pi^-$ decays which, in the limit of $\phi_s = 0$ and $|\lambda| = 1$, correspond to B^0_{sH} decays. NODE=S086TSH;LINKAGE=C

[6] Measured using a pure CP-odd final state $J/\psi f_0$(980). NODE=S086TSH;LINKAGE=AL

[7] Uses the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays assuming CP-violating angle $\beta_s(B^0 \to J/\psi\phi) = 0.02$. NODE=S086TSH;LINKAGE=AT

[8] Obtained from $\Delta\Gamma_s$ and Γ_s fit with a correlation of 0.6. NODE=S086TSH;LINKAGE=AA

[9] Measured using the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086TSH;LINKAGE=AC

B^0_{sL} MEAN LIFE

NODE=S086TSL

B^0_{sL} is the light mass state of two B^0_s CP eigenstates.

NODE=S086TSL

NODE=S086TSL

VALUE (10^{-12} s)	*DOCUMENT ID*		*TECN*	*COMMENT*
1.430$\pm$0.006 OUR EVALUATION	(Produced by HFLAV)			
1.452$\pm$0.016 OUR AVERAGE				
1.445$\pm$0.016$\pm$0.008	[1,2] AAIJ	23P	LHCB	pp at 7, 8, 13 TeV
1.479$\pm$0.034$\pm$0.011	[1] AAIJ	16AL	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.40 $\pm$0.02	[3] SIRUNYAN	18BY	CMS	pp at 8 TeV
1.379$\pm$0.026$\pm$0.017	[4] AAIJ	14F	LHCB	pp at 7, 8 TeV
1.407$\pm$0.016$\pm$0.007	[5] AAIJ	14R	LHCB	pp at 7 TeV
1.440$\pm$0.096$\pm$0.009	[5] AAIJ	12	LHCB	pp at 7 TeV
1.455$\pm$0.046$\pm$0.006	[5] AAIJ	12R	LHCB	Repl. by AAIJ 14R
	[6] AALTONEN	12D	CDF	$p\overline{p}$ at 1.96 TeV
1.437$^{+0.054}_{-0.047}$	[7,8] AALTONEN	08J	CDF	Repl. by AALTONEN 12D
1.24 $^{+0.14}_{-0.11}$ $^{+0.01}_{-0.02}$	[8] ABAZOV	05W	D0	Repl. by ABAZOV 08AM
1.05 $^{+0.16}_{-0.13}$ $\pm$0.02	[8] ACOSTA	05	CDF	Repl. by AALTONEN 08J
1.27 $\pm$0.33 $\pm$0.08	[9] BARATE	00K	ALEP	$e^+e^- \to Z$

→ UNCHECKED ←

[1] Uses $B^0_s \to J/\psi\eta$ decays. NODE=S086TSL;LINKAGE=B

[2] AAIJ 23P reports a τ_L value combined with AAIJ 16AL result as $\tau_L = 1.452 \pm 0.014 \pm 0.007$ ps. NODE=S086TSL;LINKAGE=D

[3] Measured using results in SIRUNYAN 18BY for the heavy B^0_s lifetime obtained from $B^0_s \to J/\psi\pi^+\pi^-$ decays and the average effective $B^0_s \to J/\psi\phi$ lifetime, and magnitude squared of the CP-odd amplitude $|A_\perp|^2 = 0.250 \pm 0.006$. The uncertainty includes all statistical and systematic contributions. NODE=S086TSL;LINKAGE=C

[4] Measured using $B^0_s \to D^-_s D^+_s$. The effective lifetime is translated into a decay width of $\Gamma_L = 0.725 \pm 0.014 \pm 0.009$ ps^{-1}. NODE=S086TSL;LINKAGE=A

[5] Measured using $B^0_s \to K^+K^-$ decays. There may still be CPV in the decay. NODE=S086TSL;LINKAGE=AI

[6] Uses the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays and assuming CP-violating angle $\beta_s(B^0 \to J/\psi\phi) = 0.02$. NODE=S086TSL;LINKAGE=AT

[7] Obtained from $\Delta\Gamma_s$ and Γ_s fit with a correlation of 0.6. NODE=S086TSL;LINKAGE=AA

[8] Measured using the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086TSL;LINKAGE=AC

[9] Uses $\phi\phi$ correlations from $B_s^0 \rightarrow D_s^{(*)+} D_s^{(*)-}$.

NODE=S086TSL;LINKAGE=BA

B_s^0 MEAN LIFE (Flavor specific)

NODE=S086TFS

NODE=S086TFS

→ UNCHECKED ←

VALUE (10^{-12} s)	*DOCUMENT ID*		*TECN*	*COMMENT*
1.527±0.011 OUR EVALUATION				
1.526±0.015 OUR AVERAGE	Error includes scale factor of 1.3. See the ideogram below.			
1.547±0.013±0.011	[1] AAIJ	17AN	LHCB	pp at 7, 8 TeV
1.479±0.010±0.021	[2] ABAZOV	15A	D0	$p\overline{p}$ at 1.96 TeV
1.535±0.015±0.014	[3] AAIJ	14AX	LHCB	pp at 7 TeV
1.52 ±0.15 ±0.01	[4] AAIJ	14F	LHCB	pp at 7, 8 TeV
1.60 ±0.06 ±0.01	[5] AAIJ	14R	LHCB	pp at 7 TeV
1.518±0.041±0.027	[6] AALTONEN	11AP	CDF	$p\overline{p}$ at 1.96 TeV
1.42 $^{+0.14}_{-0.13}$ ±0.03	[7] ABREU	00Y	DLPH	$e^+e^- \rightarrow Z$
1.36 ±0.09 $^{+0.06}_{-0.05}$	[8] ABE	99D	CDF	$p\overline{p}$ at 1.8 TeV
1.50 $^{+0.16}_{-0.15}$ ±0.04	[8] ACKERSTAFF	98G	OPAL	$e^+e^- \rightarrow Z$
1.54 $^{+0.14}_{-0.13}$ ±0.04	[8] BUSKULIC	96M	ALEP	$e^+e^- \rightarrow Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.398±0.044$^{+0.028}_{-0.025}$	[9] ABAZOV	06V	D0	Repl. by ABAZOV 15A

[1] AAIJ 17AN value was measured using $B_s^0 \rightarrow D_s^{(*)-} \mu^+ \nu_\mu$ decays relative to $B^0 \rightarrow D^{(*)-} \mu^+ \nu_\mu$ decays.

NODE=S086TFS;LINKAGE=D

[2] Measured using $B_s^0 \rightarrow D_s^- \mu^+ \nu_\mu X$ decays.

NODE=S086TFS;LINKAGE=AV

[3] Measured using the $B_s^0 \rightarrow D_s^- \pi^+$ decays.

NODE=S086TFS;LINKAGE=AI

[4] Measured using $B_s^0 \rightarrow D^+ D_s^-$.

NODE=S086TFS;LINKAGE=A

[5] Measured using $B_s^0 \rightarrow \pi^+ K^-$ decays.

NODE=S086TFS;LINKAGE=B

[6] AALTONEN 11AP combines the fully reconstrcuted $B_s^0 \rightarrow D_s^- \pi^+$ decays and partially reconstructed $B_s^0 \rightarrow D_s X$ decays.

NODE=S086TFS;LINKAGE=AA

[7] Uses $D_s^- \ell^+$, and $\phi \ell^+$ vertices.

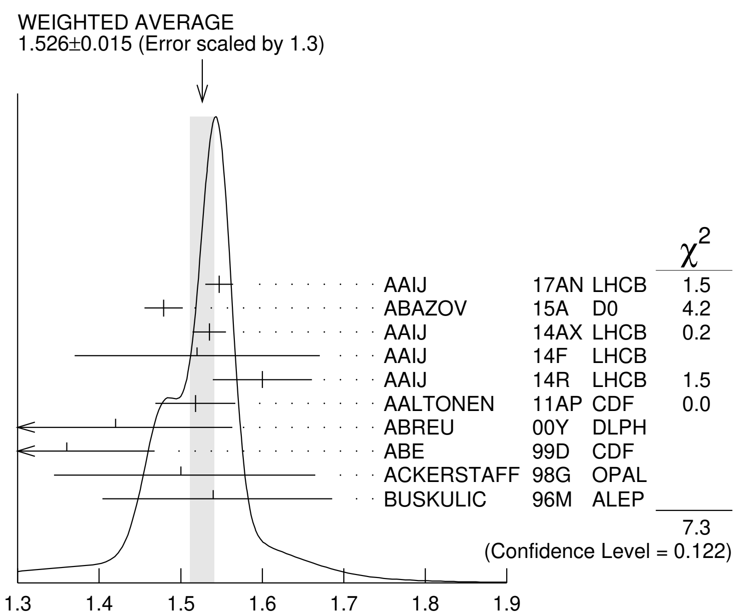
NODE=S086TFS;LINKAGE=LZ

[8] Measured using $D_s^- \ell^+$ vertices.

NODE=S086TFS;LINKAGE=C

[9] Measured using $D_s^- \mu^+$ vertices.

NODE=S086TFS;LINKAGE=AB



B_s^0 MEAN LIFE (Flavor specific) (10^{-12} s)

B_s^0 MEAN LIFE (partial)

NODE=S086222

B_s^0 mean life ($B_s \to D_s^+ D_s^-$)

NODE=S086TDD
NODE=S086TDD

VALUE (10^{-12} s)	DOCUMENT ID	TECN	COMMENT
1.379±0.031 OUR EVALUATION	(Produced by HFLAV)		
1.379±0.026±0.017	[1] AAIJ 14F	LHCB	pp at 7, 8 TeV

→ UNCHECKED ←

[1] Measured using $B_s^0 \to D_s^- D_s^+$. The effective lifetime is translated into a decay width of $\Gamma_L = 0.725 \pm 0.014 \pm 0.009$ ps^{-1}.

NODE=S086TDD;LINKAGE=A

B_s^0 mean life ($B_s \to J/\psi\phi$)

NODE=S086TJP
NODE=S086TJP

VALUE (10^{-12} s)	DOCUMENT ID	TECN	COMMENT
1.480±0.007 OUR EVALUATION			
1.480±0.007 OUR AVERAGE			
1.481±0.007±0.005	[1] SIRUNYAN 18BY	CMS	pp at 8 TeV
1.480±0.011±0.005	[1] AAIJ 14E	LHCB	pp at 7 TeV
$1.444^{+0.098}_{-0.090}\pm0.020$	[1] ABAZOV 05B	D0	$p\overline{p}$ at 1.96 TeV
$1.34^{+0.23}_{-0.19}\pm0.05$	[2] ABE 98B	CDF	$p\overline{p}$ at 1.8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$1.39^{+0.13}_{-0.16}{}^{+0.01}_{-0.02}$	[2] ABAZOV 05W	D0	$p\overline{p}$ at 1.96 TeV
$1.34^{+0.23}_{-0.19}\pm0.05$	[3] ABE 96N	CDF	Repl. by ABE 98B

→ UNCHECKED ←

[1] Measured using fully reconstructed $B_s \to J/\psi\phi$ decays. NODE=S086TJP;LINKAGE=CD

[2] Measured using the time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays. NODE=S086TJP;LINKAGE=AC

[3] ABE 96N uses 58 ± 12 exclusive $B_s \to J/\psi\phi$ events. NODE=S086TJP;LINKAGE=AB

B_s^0 mean life ($B_s \to J/\psi\eta$)

NODE=S086TJE
NODE=S086TJE

VALUE (10^{-12} s)	DOCUMENT ID	TECN	COMMENT
1.452±0.016 OUR EVALUATION	(Produced by HFLAV)		
1.452±0.016 OUR AVERAGE			
1.445±0.016±0.008	[1,2] AAIJ 23P	LHCB	pp at 7, 8, 13 TeV
1.479±0.034±0.011	[1] AAIJ 16L	LHCB	pp at 7, 8 TeV

→ UNCHECKED ←

[1] Uses $B_s^0 \to J/\psi\eta$ decays. NODE=S086TJE;LINKAGE=B

[2] AAIJ 23P reports a τ_L value combined with AAIJ 16AL result as $\tau_L = 1.452 \pm 0.014 \pm 0.007$ ps. NODE=S086TJE;LINKAGE=D

B_s^0 mean life ($B_s \to J/\psi K_S^0$)

NODE=S086TJK
NODE=S086TJK

VALUE (10^{-12} s)	DOCUMENT ID	TECN	COMMENT
1.63±0.07 OUR EVALUATION	(Produced by HFLAV)		
1.63±0.07 OUR AVERAGE			
1.59±0.07±0.03	[1] HAYRAPETY...24AX	CMS	pp at 13 TeV
1.75±0.12±0.07	[1] AAIJ 13AB	LHCB	pp at 7 TeV

→ UNCHECKED ←

[1] Measured using a pure CP-odd final state $J/\psi K_S^0$ with the assumption that contributions from penguin diagrams are small. NODE=S086TJK;LINKAGE=A

B_s^0 mean life ($B_s \to J/\psi\pi^+\pi^-$)

NODE=S086TJF
NODE=S086TJF

VALUE (10^{-12} s)	DOCUMENT ID	TECN	COMMENT
1.641±0.013 OUR EVALUATION	(Produced by HFLAV) [(1.646 ± 0.013) × 10^{-12} s OUR 2025 EVALUATION]		
1.660±0.022 OUR AVERAGE			
1.632±0.013±0.05	[1] AAIJ 19AF	LHCB	pp at 13 TeV
1.677±0.034±0.011	[2] SIRUNYAN 18BY	CMS	pp at 8 TeV
1.70 ±0.14 ±0.05	[3] ABAZOV 16C	D0	$p\overline{p}$ at 1.96 TeV
1.652±0.024±0.024	[4] AAIJ 13AR	LHCB	pp at 7 TeV
$1.70^{+0.12}_{-0.11}\pm0.03$	[5] AALTONEN 11AB	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
1.700±0.040±0.026	[5] AAIJ 12AN	LHCB	Repl. by AAIJ 13AR

NEW;→ UNCHECKED ←

[1] Based on $\Delta\Gamma = \Gamma_H - \Gamma_{B^0} = -0.05 \pm 0.004 \pm 0.004$ ps^{-1} and $\tau_{B^0} = 1.517 \pm 0.004$ ps. The first error is due to the combined $\Delta\Gamma$ uncertainty and the second is from τ_{B^0} uncertainty. NODE=S086TJF;LINKAGE=A

[2] Measured using $B_s^0 \to J/\psi\pi^+\pi^-$ decays with $0.9240 < \mathrm{m}(\pi\pi) < 1.0204$ GeV, which is dominated by the $f_0(980)$ resonance, making it a CP-odd state. NODE=S086TJF;LINKAGE=E

[3] Measured using $J/\psi\pi^+\pi^-$ mode with $0.880 < m(\pi\pi) < 1.080$ GeV/c^2, which is mostly $J/\psi f(0)(980)$ mode, a pure CP-odd final state. NODE=S086TJF;LINKAGE=B

[4] Measured using $B_s \to J/\psi\pi^+\pi^-$ decays which, in the limit of $\phi_s = 0$ and $|\lambda| = 1$, correspond to B^0_{sH} decays. NODE=S086TJF;LINKAGE=C

[5] Measured using a pure CP-odd final state $J/\psi f_0(980)$. NODE=S086TJF;LINKAGE=AL

B_s^0 mean life ($B_s \to K^+K^-$)

NODE=S086TKK
NODE=S086TKK

VALUE (10^{-12} s)	DOCUMENT ID		TECN	COMMENT
1.408±0.017 OUR EVALUATION	(Produced by HFLAV)			
1.408±0.017 OUR AVERAGE				
1.407±0.016±0.007	[1] AAIJ	14R	LHCB	pp at 7 TeV
1.440±0.096±0.009	[1] AAIJ	12	LHCB	pp at 7 TeV

→ UNCHECKED ←

[1] Measured using $B_s^0 \to K^+K^-$ decays. There may still be CPV in the decay. NODE=S086TKK;LINKAGE=AI

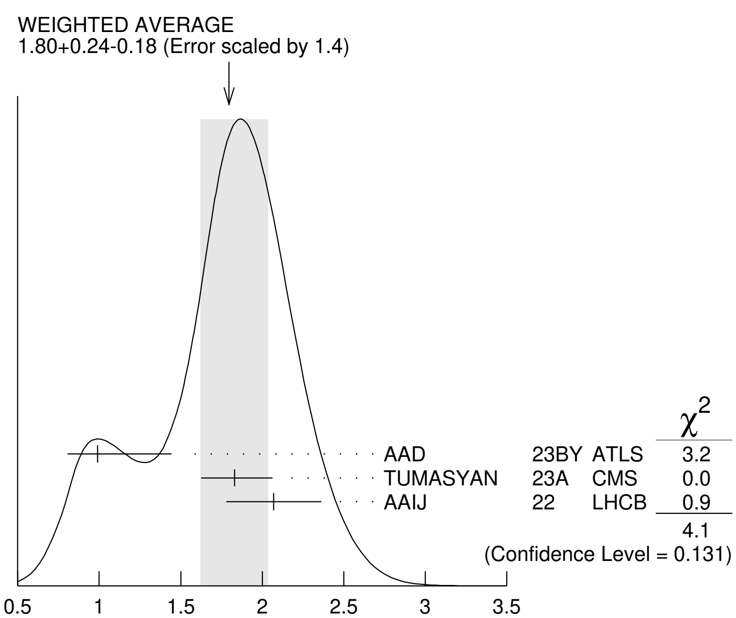
B_s^0 mean life ($B_s \to \mu\mu$)

NODE=S086TMM
NODE=S086TMM

VALUE (10^{-12} s)	DOCUMENT ID		TECN	COMMENT
1.79±0.17 OUR EVALUATION	(Produced by HFLAV)			
$1.80^{+0.24}_{-0.18}$ OUR AVERAGE	Error includes scale factor of 1.4. See the ideogram below.			
$0.99^{+0.42}_{-0.07}\pm0.17$	[1] AAD	23BY	ATLS	pp at 13 TeV
$1.83^{+0.23}_{-0.20}\pm0.04$	[1] TUMASYAN	23A	CMS	pp at 13 TeV
2.07±0.29±0.03	[1] AAIJ	22	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.70^{+0.60}_{-0.43}\pm0.09$	[1] SIRUNYAN	20AG	CMS	Repl. by TUMASYAN 23A
2.04±0.44±0.05	[1] AAIJ	17AI	LHCB	Repl. by AAIJ 22

→ UNCHECKED ←

[1] Measured using $B_s \to \mu^+\mu^-$ decays which, in the Standard Model, correspond to B^0_{sH} decays. Assumes $-2\,\mathrm{Re}(\lambda)/(1 + |\lambda|^2) = 1$. NODE=S086TMM;LINKAGE=D



B_s^0 mean life ($B_s \to \mu\mu$) (10^{-12} s)

B^0_{sL} mean life ($B_s \to J/\psi\eta$, $B_s \to D_s^+D_s^-$)

NODE=S086TLX
NODE=S086TLX

VALUE (10^{-12} s)	DOCUMENT ID
1.437±0.014 OUR EVALUATION	(Produced by HFLAV)

→ UNCHECKED ←

B^0_{sH} mean life ($B_s \to J/\psi f_0$, $B_s \to J/\psi \pi\pi$)

NODE=S086THX
NODE=S086THX

VALUE (10^{-12} s)	DOCUMENT ID
1.641±0.013 OUR EVALUATION	(Produced by HFLAV)

→ UNCHECKED ←

$\tau_{B^0_s}/\tau_{B^0}$ mean life ratio

NODE=S086A21

$\tau_{B^0_s}/\tau_{B^0}$ (direct measurements)

NODE=S086A21
NODE=S086A21

VALUE	DOCUMENT ID	TECN	COMMENT
0.980±0.006±0.003	[1] SIRUNYAN 18BY	CMS	pp at 8 TeV

[1] Measured using $B^0_s \to J/\psi\phi(1020)$ and $B^0 \to J/\psi K^*(892)^0$ decays.

NODE=S086A21;LINKAGE=A

$\Gamma_{B^0_s} - \Gamma_{B^0}$

NODE=S086A26
NODE=S086A26

VALUE (10^{12} s^{-1})	DOCUMENT ID	TECN	COMMENT
−0.0041±0.0024±0.0015	[1] AAIJ 19Q	LHCB	pp at 13 TeV

[1] Measured using time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays.

NODE=S086A26;LINKAGE=A

$\Gamma_{B^0_{sH}} - \Gamma_{B^0}$

NODE=S086A25
NODE=S086A25

VALUE (10^{12} s^{-1})	DOCUMENT ID	TECN	COMMENT
−0.050±0.004±0.004	[1] AAIJ 19AF	LHCB	pp at 7, 8, 13 TeV

[1] Measured in $B^0_s \to J/\psi \pi^+\pi^-$ decays.

NODE=S086A25;LINKAGE=A

B^0_s DECAY MODES

NODE=S086215;NODE=S086

These branching fractions all scale with B($\overline{b} \to B^0_s$).

NODE=S086

The branching fraction B($B^0_s \to D^-_s \ell^+ \nu_\ell$ anything) is not a pure measurement since the measured product branching fraction B($\overline{b} \to B^0_s$) × B($B^0_s \to D^-_s \ell^+ \nu_\ell$ anything) was used to determine B($\overline{b} \to B^0_s$), as described in the note on "B^0-$\overline{B}^0$ Mixing"

For inclusive branching fractions, *e.g.*, $B \to D^\pm$ anything, the values usually are multiplicities, not branching fractions. They can be greater than one.

	Mode		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	
Γ_1	D^-_s anything				DESIG=8
Γ_2	$D^\pm_s$ anything		(65 ± 5) %		DESIG=175
Γ_3	$D^0/\overline{D}^0$ anything		(24 ± 4) %		DESIG=174
Γ_4	$D^\pm$ anything		(13 ± 5) %		DESIG=198
Γ_5	$\ell \nu_\ell X$		(9.6 ± 0.8) %		DESIG=49
Γ_6	$e^+ \nu X^-$		(9.1 ± 0.8) %		DESIG=98
Γ_7	$\mu^+ \nu X^-$		(10.2 ± 1.0) %		DESIG=99
Γ_8	$D^-_s \ell^+ \nu_\ell$ anything	[a]	(8.1 ± 1.3) %		DESIG=4
Γ_9	$D^{*-}_s \ell^+ \nu_\ell$ anything		(5.4 ± 1.1) %		DESIG=120
Γ_{10}	$D^-_s \mu^+ \nu_\mu$		(2.31± 0.21) %		DESIG=150
Γ_{11}	$D^{*-}_s \mu^+ \nu_\mu$		(5.2 ± 0.5) %		DESIG=151
Γ_{12}	$D_{s1}(2536)^- \mu^+ \nu_\mu$, $D^-_{s1} \to D^{*-} K^0_S$		(2.7 ± 0.7) × 10^{-3}		DESIG=36
Γ_{13}	$D_{s1}(2536)^- X \mu^+ \nu$, $D^-_{s1} \to \overline{D}^0 K^+$		(4.4 ± 1.3) × 10^{-3}		DESIG=46
Γ_{14}	$D_{s2}(2573)^- X \mu^+ \nu$, $D^-_{s2} \to \overline{D}^0 K^+$		(2.7 ± 1.0) × 10^{-3}		DESIG=47
Γ_{15}	$K^- \mu^+ \nu_\mu$		(1.06± 0.09) × 10^{-4}		DESIG=154
Γ_{16}	$D^-_s \pi^+$		(2.98± 0.13) × 10^{-3}		DESIG=5
Γ_{17}	$D^-_s \rho^+$		(6.9 ± 1.4) × 10^{-3}		DESIG=39
Γ_{18}	$D^-_s \pi^+\pi^+\pi^-$		(6.1 ± 1.0) × 10^{-3}		DESIG=32
Γ_{19}	$D_{s1}(2536)^- \pi^+$, $D^-_{s1} \to D^-_s \pi^+\pi^-$		(2.4 ± 0.8) × 10^{-5}		DESIG=58
Γ_{20}	$D^\mp_s K^\pm$		(2.25± 0.12) × 10^{-4}		DESIG=37

Γ_{21}	$D_{s1}(2536)^{\mp} K^{\pm}$, $D_{s1}^{-} \to \overline{D}^{*}(2007)^{0} K^{-}$	$(2.48 \pm 0.28) \times 10^{-5}$		DESIG=180
Γ_{22}	$D_s^- K^+ \pi^+ \pi^-$	$(3.2 \pm 0.6) \times 10^{-4}$		DESIG=57
Γ_{23}	$D_s^+ D_s^-$	$(4.5 \pm 0.6) \times 10^{-3}$	S=1.3	DESIG=33
Γ_{24}	$D_s^- D^+$	$(3.1 \pm 0.5) \times 10^{-4}$		DESIG=72
Γ_{25}	$D^+ D^-$	$(2.2 \pm 0.6) \times 10^{-4}$		DESIG=73
Γ_{26}	$D^{*+} D^-$			DESIG=156
Γ_{27}	$D^{*-} D^+$			DESIG=157
Γ_{28}	$D^{*+} D^{*-}$	$(2.14 \pm 0.32) \times 10^{-4}$		DESIG=177
Γ_{29}	$D^0 \overline{D}^0$	$(1.9 \pm 0.5) \times 10^{-4}$		DESIG=74
Γ_{30}	$D_s^{*-} \pi^+$	$(1.9 ^{+0.5}_{-0.4}) \times 10^{-3}$		DESIG=40
Γ_{31}	$D_s^{*\mp} K^{\pm}$	$(1.32 ^{+0.40}_{-0.32}) \times 10^{-4}$		DESIG=113
Γ_{32}	$D_s^{*-} \rho^+$	$(9.5 \pm 2.0) \times 10^{-3}$		DESIG=41
Γ_{33}	$D_s^{*+} D_s^- + D_s^{*-} D_s^+$	(1.51 ± 0.13) %		DESIG=34
Γ_{34}	$D_s^{*+} D_s^{*-}$	(1.58 ± 0.20) %	S=1.3	DESIG=35
Γ_{35}	$D_s^{(*)+} D_s^{(*)-}$	(4.5 ± 1.4) %		DESIG=24
Γ_{36}	$D^{*-} D_s^+$	$(4.0 \pm 0.7) \times 10^{-4}$		DESIG=163
Γ_{37}	$\overline{D}^{*0} \overline{K}^0$	$(2.8 \pm 1.1) \times 10^{-4}$		DESIG=123
Γ_{38}	$\overline{D}^0 \overline{K}^0$	$(4.3 \pm 0.9) \times 10^{-4}$		DESIG=122
Γ_{39}	$\overline{D}^0 K^- \pi^+$	$(1.04 \pm 0.13) \times 10^{-3}$		DESIG=65
Γ_{40}	$\overline{D}^*(2007)^0 K^- \pi^+$	$(7.3 \pm 2.6) \times 10^{-4}$		DESIG=165
Γ_{41}	$\overline{D}^0 \overline{K}^*(892)^0$	$(4.4 \pm 0.6) \times 10^{-4}$		DESIG=48
Γ_{42}	$\overline{D}^0 \overline{K}^*(1410)$	$(3.9 \pm 3.5) \times 10^{-4}$		DESIG=84
Γ_{43}	$\overline{D}^0 \overline{K}_0^*(1430)$	$(3.0 \pm 0.7) \times 10^{-4}$		DESIG=85
Γ_{44}	$\overline{D}^0 \overline{K}_2^*(1430)$	$(1.1 \pm 0.4) \times 10^{-4}$		DESIG=86
Γ_{45}	$\overline{D}^0 \overline{K}^*(1680)$	$< 7.8 \times 10^{-5}$	CL=90%	DESIG=87
Γ_{46}	$\overline{D}^0 \overline{K}_0^*(1950)$	$< 1.1 \times 10^{-4}$	CL=90%	DESIG=88
Γ_{47}	$\overline{D}^0 \overline{K}_3^*(1780)$	$< 2.6 \times 10^{-5}$	CL=90%	DESIG=89
Γ_{48}	$\overline{D}^0 \overline{K}_4^*(2045)$	$< 3.1 \times 10^{-5}$	CL=90%	DESIG=90
Γ_{49}	$\overline{D}^0 K^- \pi^+$ (non-resonant)	$(2.1 \pm 0.8) \times 10^{-4}$		DESIG=91
Γ_{50}	$[K^+ K^-]_D \overline{K}^*(892)^0$	$(4.4 \pm 0.6) \times 10^{-4}$		DESIG=184
Γ_{51}	$[\pi^+ \pi^-]_D \overline{K}^*(892)^0$	$(4.4 \pm 0.6) \times 10^{-4}$		DESIG=185
Γ_{52}	$[\pi^+ K^-]_D \overline{K}^*(892)^0$			DESIG=186
Γ_{53}	$[K^+ \pi^-]_D \overline{K}^*(892)^0$			DESIG=187
Γ_{54}	$[\pi^+ \pi^- \pi^+ \pi^-]_D \overline{K}^*(892)^0$	$(4.4 \pm 0.6) \times 10^{-4}$		DESIG=188
Γ_{55}	$[\pi^+ K^- \pi^+ \pi^-]_D \overline{K}^*(892)^0$			DESIG=189
Γ_{56}	$[K^+ \pi^- \pi^+ \pi^-]_D \overline{K}^*(892)^0$			DESIG=190
Γ_{57}	$D_{s2}^*(2573)^- \pi^+$, $D_{s2}^* \to \overline{D}^0 K^-$	$(2.6 \pm 0.4) \times 10^{-4}$		DESIG=92
Γ_{58}	$D_{s1}^*(2700)^- \pi^+$, $D_{s1}^* \to \overline{D}^0 K^-$	$(1.6 \pm 0.8) \times 10^{-5}$		DESIG=93
Γ_{59}	$D_{s1}^*(2860)^- \pi^+$, $D_{s1}^* \to \overline{D}^0 K^-$	$(5 \pm 4) \times 10^{-5}$		DESIG=94
Γ_{60}	$D_{s3}^*(2860)^- \pi^+$, $D_{s3}^* \to \overline{D}^0 K^-$	$(2.2 \pm 0.6) \times 10^{-5}$		DESIG=95
Γ_{61}	$\overline{D}^0 K^+ K^-$	$(5.6 \pm 0.9) \times 10^{-5}$		DESIG=51
Γ_{62}	$\overline{D}^0 f_0(980)$	$< 3.1 \times 10^{-6}$	CL=90%	DESIG=114
Γ_{63}	$\overline{D}^0 \phi$	$(2.30 \pm 0.25) \times 10^{-5}$		DESIG=75
Γ_{64}	$\overline{D}^{*0} \phi$	$(3.2 \pm 0.4) \times 10^{-5}$		DESIG=143
Γ_{65}	$D^{*\mp} \pi^{\pm}$	$< 6.1 \times 10^{-6}$	CL=90%	DESIG=70
Γ_{66}	$\eta_c \phi$	$(5.0 \pm 0.9) \times 10^{-4}$		DESIG=131
Γ_{67}	$\eta' X_{s\bar{s}}$			DESIG=155
Γ_{68}	$\eta_c \pi^+ \pi^-$	$(1.8 \pm 0.7) \times 10^{-4}$		DESIG=132
Γ_{69}	$J/\psi(1S) \phi$	$(1.01 \pm 0.04) \times 10^{-3}$		DESIG=7
Γ_{70}	$J/\psi(1S) \phi \phi$	$(1.17 ^{+0.14}_{-0.16}) \times 10^{-5}$		DESIG=124
Γ_{71}	$J/\psi(1S) \pi^0$	$< 1.21 \times 10^{-5}$	CL=90%	DESIG=21
Γ_{72}	$J/\psi(1S) \eta$	$(4.45 \pm 0.25) \times 10^{-4}$	S=1.1	DESIG=22

Γ_{73}	$J/\psi(1S) K^0_S$	$(1.92 \pm 0.14) \times 10^{-5}$		DESIG=44
Γ_{74}	$J/\psi(1S) \overline{K}^*(892)^0$	$(3.95 \pm 0.24) \times 10^{-5}$		DESIG=45
Γ_{75}	$J/\psi(1S) \eta'$	$(3.53 \pm 0.22) \times 10^{-4}$	S=1.1	DESIG=50
Γ_{76}	$J/\psi(1S) \pi^+ \pi^-$	$(2.00 \pm 0.17) \times 10^{-4}$	S=1.7	DESIG=52
Γ_{77}	$J/\psi(1S) f_0(500)$, $f_0 \to \pi^+ \pi^-$	$< 4 \times 10^{-6}$	CL=90%	DESIG=101
Γ_{78}	$J/\psi(1S) \rho$, $\rho \to \pi^+ \pi^-$	$< 3.4 \times 10^{-6}$	CL=90%	DESIG=108
Γ_{79}	$J/\psi(1S) f_0(980)$, $f_0 \to \pi^+ \pi^-$	$(1.23 \pm 0.15) \times 10^{-4}$	S=2.1	DESIG=42
Γ_{80}	$J/\psi(1S) f_2(1270)$, $f_2 \to \pi^+ \pi^-$	$(1.0 \pm 0.4) \times 10^{-6}$		DESIG=53
Γ_{81}	$J/\psi(1S) f_2(1270)_0$, $f_2 \to \pi^+ \pi^-$	$(7.2 \pm 1.6) \times 10^{-7}$		DESIG=103
Γ_{82}	$J/\psi(1S) f_2(1270)_{\parallel}$, $f_2 \to \pi^+ \pi^-$	$(1.04 \pm 0.32) \times 10^{-6}$		DESIG=104
Γ_{83}	$J/\psi(1S) f_2(1270)_{\perp}$, $f_2 \to \pi^+ \pi^-$	$(1.3 \pm 0.7) \times 10^{-6}$		DESIG=105
Γ_{84}	$J/\psi(1S) f_0(1370)$, $f_0 \to \pi^+ \pi^-$	$(4.4 {}^{+0.6}_{-4.0}) \times 10^{-5}$		DESIG=43
Γ_{85}	$J/\psi(1S) f_0(1500)$, $f_0 \to \pi^+ \pi^-$	$(2.02 {}^{+0.32}_{-0.24}) \times 10^{-5}$		DESIG=106
Γ_{86}	$J/\psi(1S) f'_2(1525)_0$, $f'_2 \to \pi^+ \pi^-$	$(1.02 \pm 0.22) \times 10^{-6}$		DESIG=107
Γ_{87}	$J/\psi(1S) f'_2(1525)_{\parallel}$, $f'_2 \to \pi^+ \pi^-$	$(1.2 {}^{+2.6}_{-0.8}) \times 10^{-7}$		DESIG=109
Γ_{88}	$J/\psi(1S) f'_2(1525)_{\perp}$, $f'_2 \to \pi^+ \pi^-$	$(5 \pm 4) \times 10^{-7}$		DESIG=110
Γ_{89}	$J/\psi(1S) f_0(1790)$, $f_0 \to \pi^+ \pi^-$	$(4.8 {}^{+10.0}_{-1.0}) \times 10^{-6}$		DESIG=111
Γ_{90}	$J/\psi(1S) \pi^+ \pi^-$ (nonresonant)	$(1.72 {}^{+1.00}_{-0.34}) \times 10^{-5}$		DESIG=54
Γ_{91}	$J/\psi(1S) \overline{K}^0 \pi^+ \pi^-$	$< 4.4 \times 10^{-5}$	CL=90%	DESIG=81
Γ_{92}	$J/\psi(1S) K^+ K^-$	$(7.9 \pm 0.7) \times 10^{-4}$		DESIG=71
Γ_{93}	$J/\psi(1S) K^0 K^- \pi^+ +$ c.c.	$(9.5 \pm 1.3) \times 10^{-4}$		DESIG=79
Γ_{94}	$J/\psi(1S) \overline{K}^0 K^+ K^-$	$< 1.2 \times 10^{-5}$	CL=90%	DESIG=80
Γ_{95}	$J/\psi K^*(892)^0 \overline{K}^*(892)^0$	$(1.07 \pm 0.09) \times 10^{-4}$		DESIG=159
Γ_{96}	$J/\psi(1S) f'_2(1525)$	$(2.6 \pm 0.6) \times 10^{-4}$		DESIG=56
Γ_{97}	$J/\psi(1S) p \overline{p}$	$(3.6 \pm 0.4) \times 10^{-6}$		DESIG=60
Γ_{98}	$J/\psi(1S) \gamma$	$< 7.3 \times 10^{-6}$	CL=90%	DESIG=112
Γ_{99}	$J/\psi \mu^+ \mu^-$, $J/\psi \to \mu^+ \mu^-$	$< 2.6 \times 10^{-9}$	CL=95%	DESIG=168
Γ_{100}	$J/\psi(1S) \pi^+ \pi^- \pi^+ \pi^-$	$(7.4 \pm 0.8) \times 10^{-5}$		DESIG=77
Γ_{101}	$J/\psi(1S) f_1(1285)$	$(7.2 \pm 1.4) \times 10^{-5}$		DESIG=78
Γ_{102}	$J/\psi(1S) \overline{D}^0$	$< 1.0 \times 10^{-6}$	CL=90%	DESIG=183
Γ_{103}	$\psi(2S) \eta$	$(3.7 \pm 0.8) \times 10^{-4}$		DESIG=66
Γ_{104}	$\psi(2S) \eta'$	$(1.37 \pm 0.33) \times 10^{-4}$		DESIG=100
Γ_{105}	$\psi(2S) \pi^+ \pi^-$	$(6.8 \pm 1.2) \times 10^{-5}$		DESIG=67
Γ_{106}	$\psi(2S) \phi$	$(5.1 \pm 0.4) \times 10^{-4}$		DESIG=6
Γ_{107}	$\psi(2S) K^0$	$(1.9 \pm 0.5) \times 10^{-5}$		DESIG=166
Γ_{108}	$\psi(2S) K^- \pi^+$	$(3.1 \pm 0.4) \times 10^{-5}$		DESIG=118
Γ_{109}	$\psi(2S) \overline{K}^*(892)^0$	$(3.3 \pm 0.5) \times 10^{-5}$		DESIG=119
Γ_{110}	$\chi_{c1} \phi$	$(1.92 \pm 0.25) \times 10^{-4}$		DESIG=68
Γ_{111}	$\chi_{c1} K^+ K^-$			DESIG=138
Γ_{112}	$\chi_{c2} K^+ K^-$			DESIG=139
Γ_{113}	$\chi_{c1}(3872) \phi$	$(9.6 \pm 3.2) \times 10^{-5}$		DESIG=152
Γ_{114}	$\chi_{c1}(3872) (K^+ K^-)_{non-\phi}$	$(7.6 \pm 3.0) \times 10^{-5}$		DESIG=160
Γ_{115}	$\chi_{c1}(3872) \pi^+ \pi^-$	$(3.7 \pm 1.5) \times 10^{-5}$		DESIG=173
Γ_{116}	$\pi^+ \pi^-$	$(7.1 \pm 0.8) \times 10^{-7}$		DESIG=16
Γ_{117}	$\pi^0 \pi^0$	$< 7.7 \times 10^{-6}$	CL=90%	DESIG=14
Γ_{118}	$\eta \pi^0$	$< 1.0 \times 10^{-3}$	CL=90%	DESIG=13
Γ_{119}	$\eta \eta$	$< 1.43 \times 10^{-4}$	CL=90%	DESIG=12

Γ_{120}	$\rho^0\rho^0$	$< 3.20 \times 10^{-4}$	CL=90%	DESIG=25
Γ_{121}	$\eta' K^0_S$	$< 8.16 \times 10^{-6}$	CL=90%	DESIG=169
Γ_{122}	$\eta'\eta$	$< 6.5 \times 10^{-5}$	CL=90%	DESIG=153
Γ_{123}	$\eta'\eta'$	$(3.3 \pm 0.7) \times 10^{-5}$		DESIG=121
Γ_{124}	$\eta'\phi$	$< 8.2 \times 10^{-7}$	CL=90%	DESIG=129
Γ_{125}	$\phi f_0(980)$, $f_0(980) \to \pi^+\pi^-$	$(1.12 \pm 0.21) \times 10^{-6}$		DESIG=126
Γ_{126}	$\phi f_2(1270)$, $f_2(1270) \to \pi^+\pi^-$	$(6.1 {}^{+1.8}_{-1.5}) \times 10^{-7}$		DESIG=127
Γ_{127}	$\phi\rho^0$	$(2.7 \pm 0.8) \times 10^{-7}$		DESIG=28
Γ_{128}	$\phi\pi^+\pi^-$	$(3.5 \pm 0.5) \times 10^{-6}$		DESIG=125
Γ_{129}	$\phi\phi$	$(1.83 \pm 0.14) \times 10^{-5}$		DESIG=30
Γ_{130}	$\phi\phi\phi$	$(2.1 \pm 0.6) \times 10^{-6}$		DESIG=136
Γ_{131}	$\pi^+ K^-$	$(5.9 \pm 0.6) \times 10^{-6}$		DESIG=9
Γ_{132}	$K^+ K^-$	$(2.61 \pm 0.16) \times 10^{-5}$		DESIG=10
Γ_{133}	$K^0 \overline{K}^0$	$(1.76 \pm 0.31) \times 10^{-5}$		DESIG=38
Γ_{134}	$K^0\pi^+\pi^-$	$(9.5 \pm 2.1) \times 10^{-6}$		DESIG=61
Γ_{135}	$K^0 K^\pm\pi^\mp$	$(8.4 \pm 0.9) \times 10^{-5}$		DESIG=62
Γ_{136}	$K^*(892)^-\pi^+$	$(2.9 \pm 1.1) \times 10^{-6}$		DESIG=96
Γ_{137}	$K^*(892)^\pm K^\mp$	$(1.9 \pm 0.5) \times 10^{-5}$		DESIG=97
Γ_{138}	$K^*_0(1430)^\pm K^\mp$	$(3.1 \pm 2.5) \times 10^{-5}$		DESIG=144
Γ_{139}	$K^*_2(1430)^\pm K^\mp$	$(1.0 \pm 1.7) \times 10^{-5}$		DESIG=145
Γ_{140}	$K^*(892)^0 \overline{K}^0 +$ c.c.	$(2.0 \pm 0.6) \times 10^{-5}$		DESIG=146
Γ_{141}	$K^*_0(1430) \overline{K}^0 +$ c.c.	$(3.3 \pm 1.0) \times 10^{-5}$		DESIG=147
Γ_{142}	$K^*_2(1430)^0 \overline{K}^0 +$ c.c.	$(1.7 \pm 2.2) \times 10^{-5}$		DESIG=148
Γ_{143}	$K^0_S \overline{K}^*(892)^0 +$ c.c.	$(1.6 \pm 0.4) \times 10^{-5}$		DESIG=115
Γ_{144}	$K^0 K^+ K^-$	$(1.3 \pm 0.6) \times 10^{-6}$		DESIG=63
Γ_{145}	$\overline{K}^*(892)^0\rho^0$	$< 7.67 \times 10^{-4}$	CL=90%	DESIG=26
Γ_{146}	$\overline{K}^*(892)^0 K^*(892)^0$	$(1.11 \pm 0.27) \times 10^{-5}$		DESIG=27
Γ_{147}	$K^*(892)^0 \overline{K}^*_2(1430)^0$			DESIG=140
Γ_{148}	$K^*_2(1430)^0 \overline{K}^*(892)^0$			DESIG=141
Γ_{149}	$K^*_2(1430)^0 \overline{K}^*_2(1430)^0$			DESIG=142
Γ_{150}	$\phi K^*(892)^0$	$(1.14 \pm 0.30) \times 10^{-6}$		DESIG=29
Γ_{151}	$p\overline{p}$	$< 4.4 \times 10^{-9}$	CL=90%	DESIG=17
Γ_{152}	$p\overline{p}K^0$	$(9.1 \pm 2.0) \times 10^{-7}$		DESIG=197
Γ_{153}	$p\overline{p}K^+K^-$	$(4.5 \pm 0.5) \times 10^{-6}$		DESIG=133
Γ_{154}	$p\overline{p}K^+\pi^-$	$(1.39 \pm 0.26) \times 10^{-6}$		DESIG=134
Γ_{155}	$p\overline{p}\pi^+\pi^-$	$(4.3 \pm 2.0) \times 10^{-7}$		DESIG=135
Γ_{156}	$p\overline{p}p\overline{p}$	$(2.3 \pm 1.0) \times 10^{-8}$		DESIG=178
Γ_{157}	$p\overline{\Lambda}K^- +$ c.c.	$(5.5 \pm 1.0) \times 10^{-6}$		DESIG=128
Γ_{158}	$\Lambda^-_c\Lambda\pi^+$	$(3.6 \pm 1.6) \times 10^{-4}$		DESIG=69
Γ_{159}	$\Lambda^-_c\Lambda^+_c$	$< 8.0 \times 10^{-5}$	CL=95%	DESIG=76

Lepton family (*LF*), lepton (*L*), baryon (*B*) number violating modes or $\Delta B = 1$ weak neutral current (*B1*) modes NODE=S086;CLUMP=B

Γ_{160}	$\gamma\gamma$	*B1*		$< 3.1 \times 10^{-6}$	CL=90%	DESIG=11
Γ_{161}	$\phi\gamma$	*B1*		$(3.4 \pm 0.4) \times 10^{-5}$		DESIG=18
Γ_{162}	$f_2(1270)\gamma$	*B1*		$(9 {}^{+4}_{-5}) \times 10^{-6}$		DESIG=191
Γ_{163}	$f'_2(1525)\gamma$	*B1*		$(6.7 {}^{+0.9}_{-0.8}) \times 10^{-6}$		DESIG=192
Γ_{164}	$\phi(1680)\gamma$, $\phi \to K^+K^-$	*B1*		$(9.3 \pm 2.4) \times 10^{-7}$		DESIG=193
Γ_{165}	$\phi_3(1850)\gamma$, $\phi_3 \to K^+K^-$	*B1*		$(7 {}^{+6}_{-5}) \times 10^{-8}$		DESIG=194
Γ_{166}	$f_2(2010)\gamma$, $f_2 \to K^+K^-$	*B1*		$(1.0 {}^{+0.7}_{-0.5}) \times 10^{-7}$		DESIG=195
Γ_{167}	$\mu^+\mu^-$	*B1*		$(3.34 \pm 0.27) \times 10^{-9}$		DESIG=15
Γ_{168}	e^+e^-	*B1*		$< 9.4 \times 10^{-9}$	CL=90%	DESIG=20
Γ_{169}	$\tau^+\tau^-$	*B1*		$< 6.8 \times 10^{-3}$	CL=95%	DESIG=130
Γ_{170}	$\mu^+\mu^-\gamma$	*B1*		$< 4.2 \times 10^{-8}$	CL=95%	DESIG=170
Γ_{171}	$\mu^+\mu^-\mu^+\mu^-$	*B1*		$< 8.6 \times 10^{-10}$	CL=95%	DESIG=59
Γ_{172}	SP, $S \to \mu^+\mu^-$, $P \to \mu^+\mu^-$	*B1*	[b]	$< 2.2 \times 10^{-9}$	CL=95%	DESIG=64

Γ_{173}	$aa,\ a \to \mu^+\mu^-$	B1		$< 5.8 \times 10^{-10}$	CL=95%	DESIG=167
Γ_{174}	$\phi(1020)\mu^+\mu^-$	B1		$(8.2 \pm 0.4) \times 10^{-7}$		DESIG=31
Γ_{175}	$f_2'(1525)\mu^+\mu^-$	B1		$(1.57 \pm 0.22) \times 10^{-7}$		DESIG=164
Γ_{176}	$\overline{K}^*(892)^0\mu^+\mu^-$	B1		$(2.9 \pm 1.1) \times 10^{-8}$		DESIG=137
Γ_{177}	$\pi^+\pi^-\mu^+\mu^-$	B1		$(8.4 \pm 1.7) \times 10^{-8}$		DESIG=117
Γ_{178}	$\overline{D}^0\mu^+\mu^-$	B1		$< 1.2 \times 10^{-7}$	CL=90%	DESIG=182
Γ_{179}	$\phi\nu\overline{\nu}$	B1		$< 5.4 \times 10^{-3}$	CL=90%	DESIG=19
Γ_{180}	invisible	B1				DESIG=181
Γ_{181}	$e^\pm\mu^\mp$	LF	[c]	$< 5.4 \times 10^{-9}$	CL=90%	DESIG=23
Γ_{182}	$e^\pm\tau^\mp$	LF		$< 1.4 \times 10^{-3}$	CL=90%	DESIG=171
Γ_{183}	$\mu^\pm\tau^\mp$	LF		$< 4.2 \times 10^{-5}$	CL=95%	DESIG=149
Γ_{184}	$\phi\mu^\pm e^\mp$	LF		$< 1.6 \times 10^{-8}$	CL=90%	DESIG=176
Γ_{185}	$\phi\mu^\pm\tau^\mp$	LF		$< 1.0 \times 10^{-5}$	CL=90%	DESIG=196
Γ_{186}	$p\mu^-$	L,B		$< 1.21 \times 10^{-8}$	CL=90%	DESIG=179

[a] Not a pure measurement. See note at head of B_s^0 Decay Modes. LINKAGE=X86

[b] Here S and P are the hypothetical scalar and pseudoscalar particles with masses of 2.5 GeV/c^2 and 214.3 MeV/c^2, respectively. LINKAGE=BSP

[c] The value is for the sum of the charge states or particle/antiparticle states indicated. LINKAGE=SG

FIT INFORMATION

An overall fit to 16 branching ratios uses 28 measurements to determine 9 parameters. The overall fit has a $\chi^2 = 32.6$ for 19 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left\langle\delta x_i \delta x_j\right\rangle/(\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{total}$.

	x_{16}	x_{18}	x_{20}	x_{69}	x_{72}	x_{75}	x_{76}	x_{79}
x_{18}	17							
x_{20}	81	13						
x_{69}	0	0	0					
x_{72}	0	0	0	46				
x_{75}	0	0	0	39	83			
x_{76}	0	0	0	41	19	16		
x_{79}	0	0	0	29	14	11	52	
x_{129}	0	0	0	15	7	6	6	4

B_s^0 BRANCHING RATIOS

NODE=S086230

$\Gamma(D_s^\pm \text{ anything})/\Gamma_{total}$ Γ_2/Γ

NODE=S086P72

NODE=S086P72

NEW

VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
0.65 ±0.05 OUR AVERAGE						
[0.92 ± 0.11 OUR 2025 AVERAGE]						
0.634±0.045±0.022		[1,2] ADACHI	25O	BEL2	±	$e^+e^- \to \Upsilon(5S)$
0.91 ±0.18 ±0.41		[3] DRUTSKOY	07	BELL	−	$e^+e^- \to \Upsilon(5S)$
0.81 ±0.24 ±0.22	90	[4] BUSKULIC	96E	ALEP	−	$e^+e^- \to Z$
1.56 ±0.58 ±0.44	147	[5] ACTON	92N	OPAL	−	$e^+e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.92 ±0.11		[6] ZHUKOVA	23	BELL	±	$e^+e^- \to \Upsilon(5S)$
0.605±0.058±0.022		[7,8] WANG	22	BELL	−	$e^+e^- \to \Upsilon(5S)$

[1] ADACHI 25O branching fraction is measured to be $0.0686 \pm 0.072 \pm 0.040$. They improve the measurement by averaging this result with the previous BELLE measurement with semileptonic tagging in WANG 22 after rescaling the previous measurement with the most recent values of D_s^+ branching fractions and taking into account correlated uncertainties. NODE=S086P72;LINKAGE=PA

[2] Supersedes ZHUKOVA 23 and partially WANG 22. NODE=S086P72;LINKAGE=PB

[3] The extraction of this result takes into account the correlation between the measurements of B($\Upsilon(5S) \rightarrow D_s X$) and B($\Upsilon(5S) \rightarrow D^0 X$). NODE=S086P72;LINKAGE=DR

[4] BUSKULIC 96E separate $c\overline{c}$ and $b\overline{b}$ sources of D_s^+ mesons using a lifetime tag, subtract generic $\overline{b} \rightarrow W^+ \rightarrow D_s^+$ events, and obtain B($\overline{b} \rightarrow B_s^0$) $\times$ B($B_s^0 \rightarrow D_s^-$ anything) $= 0.088 \pm 0.020 \pm 0.020$ assuming B($D_s \rightarrow \phi\pi$) $= (3.5 \pm 0.4) \times 10^{-2}$ and PDG 1994 values for the relative partial widths to other D_s channels. We evaluate using our current values B($\overline{b} \rightarrow B_s^0$) $= 0.107 \pm 0.014$ and B($D_s \rightarrow \phi\pi$) $= 0.036 \pm 0.009$. Our first error is their experiment's and our second error is that due to B($\overline{b} \rightarrow B_s^0$) and B($D_s \rightarrow \phi\pi$). NODE=S086P72;LINKAGE=B

[5] ACTON 92N assume that excess of 147 ± 48 D_s^0 events over that expected from B^0, B^+, and $c\overline{c}$ is all from B_s^0 decay. The product branching fraction is measured to be B($\overline{b} \rightarrow B_s^0$)B($B_s^0 \rightarrow D_s^-$ anything)$\times$B($D_s^- \rightarrow \phi\pi^-$) $= (5.9 \pm 1.9 \pm 1.1) \times 10^{-3}$. We evaluate using our current values B($\overline{b} \rightarrow B_s^0$) $= 0.107 \pm 0.014$ and B($D_s \rightarrow \phi\pi$) $= 0.036 \pm 0.009$. Our first error is their experiment's and our second error is that due to B($\overline{b} \rightarrow B_s^0$) and B($D_s \rightarrow \phi\pi$). NODE=S086P72;LINKAGE=A

[6] Repl. by ADACHI 25O. NODE=S086P72;LINKAGE=PC

[7] WANG 22 selects the B_s events by tagging the accompanying B_s via partial reconstruction of the semileptonic decays $B_s \rightarrow D_s X \ell^+ \nu$. Partially superseded by ADACHI 25O. NODE=S086P72;LINKAGE=C

[8] This measurement, originally $0.602 \pm 0.058 \pm 0.023$, has been rescaled by ADACHI 25O with the most recent values of D_s^+ branching fractions. NODE=S086P72;LINKAGE=D

$\Gamma(D^0/\overline{D}^0 \text{anything})/\Gamma(D_s^\pm \text{anything})$ Γ_3/Γ_2

NODE=S086P71

VALUE	DOCUMENT ID		TECN	COMMENT
0.416±0.018±0.092	ZHUKOVA	23	BELL	$e^+e^- \rightarrow \Upsilon(5S)$

$\Gamma(D^0/\overline{D}^0 \text{anything})/\Gamma_{\text{total}}$ Γ_3/Γ

NODE=S086P92

VALUE	DOCUMENT ID		TECN	COMMENT
0.239±0.041±0.018	[1] ADACHI	25O	BEL2	$e^+e^- \rightarrow \Upsilon(5S)$

[1] ADACHI 25O direct measurement of the branching fraction is $0.215 \pm 0.061 \pm 0.018$. They improve the measurement by averaging this result with the previous BELLE measurement of B($B_s^0 \rightarrow D^0/\overline{D}^0 X$)/B($B_s^0 \rightarrow D_s^\pm X$) $= 0.416 \pm 0.018 \pm 0.092$ of ZHUKOVA 23, multiplied by best value of B($B_s^0 \rightarrow D_s^\pm X$) obtained by ADACHI 25O, and taking into account correlated uncertainties. NODE=S086P92;LINKAGE=A

$\Gamma(D^\pm \text{anything})/\Gamma_{\text{total}}$ Γ_4/Γ

NODE=S086P91

VALUE	DOCUMENT ID		TECN	COMMENT
0.126±0.046±0.013	ADACHI	25O	BEL2	$e^+e^- \rightarrow \Upsilon(5S)$

$\Gamma(\ell\nu_\ell X)/\Gamma_{\text{total}}$ Γ_5/Γ

NODE=S086R54

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
9.6±0.8 OUR AVERAGE				
$9.6 \pm 0.4 \pm 0.7$	[1] OSWALD	13	BELL	$e^+e^- \rightarrow \Upsilon(5S)$
$9.5^{+2.5}_{-2.0}{}^{+1.1}_{-1.9}$	[2] LEES	12A	BABR	e^+e^-

[1] The measurement corresponds to the average of the electron and muon branching fractions. NODE=S086R54;LINKAGE=A

[2] The measurement corresponds to a branching fraction where the lepton originates from bottom decay and is the average between the electron and muon branching fractions. LEES 12A uses the correlation of the production of ϕ mesons in association with a lepton in e^+e^- data taken at center-of-mass energies between 10.54 and 11.2 GeV. NODE=S086R54;LINKAGE=LE

$\Gamma(e^+\nu X^-)/\Gamma_{\text{total}}$ Γ_6/Γ

NODE=S086R98

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
9.1±0.5±0.6	OSWALD	13	BELL	$e^+e^- \rightarrow \Upsilon(5S)$

$\Gamma(\mu^+\nu X^-)/\Gamma_{\text{total}}$ Γ_7/Γ

NODE=S086R99

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
10.2±0.6±0.8	OSWALD	13	BELL	$e^+e^- \rightarrow \Upsilon(5S)$

$\Gamma(D_s^- \ell^+ \nu_\ell \text{anything})/\Gamma_{\text{total}}$ Γ_8/Γ

NODE=S086R2
NODE=S086R2

The values and averages in this section serve only to show what values result if one assumes our B($\overline{b} \to B_s^0$). They cannot be thought of as measurements since the underlying product branching fractions were also used to determine B($\overline{b} \to B_s^0$) as described in the note on "Production and Decay of b-Flavored Hadrons."

NODE=S086R2

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
8.1±1.3 OUR AVERAGE						
8.2±0.2±1.5		[1] OSWALD	15	BELL	$e^+ e^- \to \Upsilon(5S)$	
7.6±1.2±2.1	134	[2] BUSKULIC	95O	ALEP	$e^+ e^- \to Z$	SYCLP=A
10.7±4.3±2.9		[3] ABREU	92M	DLPH	$e^+ e^- \to Z$	SYCLP=A
10.3±3.6±2.8	18	[4] ACTON	92N	OPAL	$e^+ e^- \to Z$	SYCLP=A
• • • We do not use the following data for averages, fits, limits, etc. • • •						
13 ±4 ±4	27	[5] BUSKULIC	92E	ALEP	$e^+ e^- \to Z$	

[1] Obtains $B_s \to D_s X e \nu$, and $D_s X \mu \nu$ separately, then combines them by assuming systematic uncertainties are fully correlated, except for the one on lepton identification. The third uncertainty adds in quadrature systematic uncertainties from external sources (number of B_s events, and $D_s^{(*)}$ branching fractions). OSWALD 15 also measures the cross-section $\sigma(e^+ e^- \to B_s^{(*)} \overline{B}_s^{(*)}) = 53.8 \pm 1.4 \pm 5.3$ pb at $\sqrt{s} = 10.86$ GeV. NODE=S086R2;LINKAGE=E

[2] BUSKULIC 95O use $D_s \ell$ correlations. The measured product branching ratio is B($\overline{b} \to B_s$) × B($B_s \to D_s^- \ell^+ \nu_\ell$ anything) = $(0.82 \pm 0.09^{+0.13}_{-0.14})$% assuming B($D_s \to \phi\pi$) = $(3.5 \pm 0.4) \times 10^{-2}$ and PDG 1994 values for the relative partial widths to the six other D_s channels used in this analysis. Combined with results from $\Upsilon(4S)$ experiments this can be used to extract B($\overline{b} \to B_s$) = $(11.0 \pm 1.2^{+2.5}_{-2.6})$%. We evaluate using our current values B($\overline{b} \to B_s^0$) = 0.107 ± 0.014 and B($D_s \to \phi\pi$) = 0.036 ± 0.009. Our first error is their experiment's and our second error is that due to B($\overline{b} \to B_s^0$) and B($D_s \to \phi\pi$). NODE=S086R2;LINKAGE=AE

[3] ABREU 92M measured muons only and obtained product branching ratio B($Z \to b$ or $\overline{b}$) × B($\overline{b} \to B_s$) × B($B_s \to D_s \mu^+ \nu_\mu$ anything) × B($D_s \to \phi\pi$) = $(18 \pm 8) \times 10^{-5}$. We evaluate using our current values B($\overline{b} \to B_s^0$) = 0.107 ± 0.014 and B($D_s \to \phi\pi$) = 0.036 ± 0.009. Our first error is their experiment's and our second error is that due to B($\overline{b} \to B_s^0$) and B($D_s \to \phi\pi$). We use B($Z \to b$ or $\overline{b}$) = 2B($Z \to b\overline{b}$) = 2×(0.2212 ± 0.0019). NODE=S086R2;LINKAGE=A

[4] ACTON 92N is measured using $D_s \to \phi\pi^+$ and $K^*(892)^0 K^+$ events. The product branching fraction measured is measured to be B($\overline{b} \to B_s^0$)B($B_s^0 \to D_s^- \ell^+ \nu_\ell$ anything) ×B($D_s^- \to \phi\pi^-$) = $(3.9 \pm 1.1 \pm 0.8) \times 10^{-4}$. We evaluate using our current values B($\overline{b} \to B_s^0$) = 0.107 ± 0.014 and B($D_s \to \phi\pi$) = 0.036 ± 0.009. Our first error is their experiment's and our second error is that due to B($\overline{b} \to B_s^0$) and B($D_s \to \phi\pi$). NODE=S086R2;LINKAGE=C

[5] BUSKULIC 92E is measured using $D_s \to \phi\pi^+$ and $K^*(892)^0 K^+$ events. They use 2.7 ± 0.7% for the $\phi\pi^+$ branching fraction. The average product branching fraction is measured to be B($\overline{b} \to B_s^0$)B($B_s^0 \to D_s^- \ell^+ \nu_\ell$ anything) =$0.020 \pm 0.0055^{+0.005}_{-0.006}$. We evaluate using our current values B($\overline{b} \to B_s^0$) = 0.107 ± 0.014 and B($D_s \to \phi\pi$) = 0.036 ± 0.009. Our first error is their experiment's and our second error is that due to B($\overline{b} \to B_s^0$) and B($D_s \to \phi\pi$). Superseded by BUSKULIC 95O. NODE=S086R2;LINKAGE=D

$\Gamma(D_s^{*-} \ell^+ \nu_\ell \text{anything})/\Gamma_{\text{total}}$ Γ_9/Γ

NODE=S086S04
NODE=S086S04

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
5.4±0.4±1.0	[1] OSWALD	15	BELL	$e^+ e^- \to \Upsilon(5S)$

[1] Obtains $B_s \to D_s^* X e \nu$, and $D_s^* X \mu \nu$ separately, then combines them by assuming systematic uncertainties are fully correlated, except for the one on lepton identification. The third uncertainty adds in quadrature systematic uncertainties from external sources (number of B_s events, and $D_s^{(*)}$ branching fractions). OSWALD 15 also measures the cross-section $\sigma(e^+ e^- \to B_s^{(*)} \overline{B}_s^{(*)}) = 53.8 \pm 1.4 \pm 5.3$ pb at $\sqrt{s} = 10.86$ GeV. NODE=S086S04;LINKAGE=A

$\Gamma(D_s^- \mu^+ \nu_\mu)/\Gamma_{\text{total}}$ Γ_{10}/Γ

NODE=S086P49
NODE=S086P49

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
2.31±0.21 OUR AVERAGE [(2.29 ± 0.21) × 10^{-2} OUR 2025 AVERAGE]				NEW
2.31±0.20±0.07	[1] AAIJ	20E	LHCB	pp at 7, 8 TeV

[1] AAIJ 20E reports $[\Gamma(B_s^0 \to D_s^- \mu^+ \nu_\mu)/\Gamma_{\text{total}}]$ / $[B(B^0 \to D^- \ell^+ \nu_\ell)]$ = 1.09 ± 0.05 ± 0.06 ± 0.05 which we multiply by our best (shown rounded) value B($B^0 \to D^- \ell^+ \nu_\ell$) = $(2.12 \pm 0.06) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086P49;LINKAGE=A

$\Gamma(D_s^{*-}\mu^+\nu_\mu)/\Gamma_{total}$ Γ_{11}/Γ

NODE=S086P50

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
5.2±0.5±0.1	[1] AAIJ	20E	LHCB	pp at 7, 8 TeV

[1] AAIJ 20E reports $[\Gamma(B_s^0 \rightarrow D_s^{*-}\mu^+\nu_\mu)/\Gamma_{total}]$ / $[B(B^0 \rightarrow D^*(2010)^-\ell^+\nu_\ell)] = 1.06 \pm 0.05 \pm 0.07 \pm 0.05$ which we multiply by our best (shown rounded) value $B(B^0 \rightarrow D^*(2010)^-\ell^+\nu_\ell) = (4.90 \pm 0.12) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P50;LINKAGE=A

$\Gamma(D_s^-\mu^+\nu_\mu)/\Gamma(D_s^{*-}\mu^+\nu_\mu)$ Γ_{10}/Γ_{11}

NODE=S086P51

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.464±0.013±0.043	[1] AAIJ	20E	LHCB	pp at 7, 8 TeV

[1] AAIJ 20E value is not independent of other reported measurements.

NODE=S086P51;LINKAGE=A

$\Gamma(D_{s1}(2536)^-\mu^+\nu_\mu,\ D_{s1}^- \rightarrow D^{*-}K_S^0)/\Gamma_{total}$ Γ_{12}/Γ

NODE=S086R36

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.7±0.7±0.2	[1] ABAZOV	09G	D0	$p\overline{p}$ at 1.96 TeV

[1] ABAZOV 09G reports $[\Gamma(B_s^0 \rightarrow D_{s1}(2536)^-\mu^+\nu_\mu,\ D_{s1}^- \rightarrow D^{*-}K_S^0)/\Gamma_{total}] \times [B(\overline{b} \rightarrow B_s^0 \,\text{at}\, Z)] = (2.66 \pm 0.52 \pm 0.45) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(\overline{b} \rightarrow B_s^0 \,\text{at}\, Z) = (10.0 \pm 0.8) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R36;LINKAGE=AB

$\Gamma(D_{s1}(2536)^- X\mu^+\nu,\ D_{s1}^- \rightarrow \overline{D}^0K^+)/\Gamma(D_s^-\ell^+\nu_\ell\,\text{anything})$ Γ_{13}/Γ_8

NODE=S086R48

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
5.4±1.2±0.5	AAIJ	11A	LHCB	pp at 7 TeV

$\Gamma(D_{s2}(2573)^- X\mu^+\nu,\ D_{s2}^- \rightarrow \overline{D}^0K^+)/\Gamma(D_s^-\ell^+\nu_\ell\,\text{anything})$ Γ_{14}/Γ_8

NODE=S086R49

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
3.3±1.0±0.4	AAIJ	11A	LHCB	pp at 7 TeV

$\Gamma(D_{s1}(2536)^- X\mu^+\nu,\ D_{s1}^- \rightarrow \overline{D}^0K^+)/\Gamma(D_{s2}(2573)^- X\mu^+\nu,\ D_{s2}^- \rightarrow \overline{D}^0K^+)$ Γ_{13}/Γ_{14}

NODE=S086R50

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.61±0.14±0.05	[1] AAIJ	11A	LHCB	pp at 7 TeV

[1] Not independent of other AAIJ 11A measurements.

NODE=S086R50;LINKAGE=AA

$\Gamma(K^-\mu^+\nu_\mu)/\Gamma(D_s^-\mu^+\nu_\mu)$ Γ_{15}/Γ_{10}

NODE=S086P54

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
4.89±0.21±0.25	[1,2] AAIJ	21G	LHCB	pp at 8 TeV

[1] AAIJ 21G measures $B(B_s^0 \rightarrow K^-\mu^+\nu_\mu)/B(B_s^0 \rightarrow D_s^-\mu^+\nu_\mu) = (4.89 \pm 0.21 {}^{+0.20}_{-0.21} \pm 0.14) \times 10^{-3}$ over the whole q^2 range, where the last uncertainty is due to the $D_s^- \rightarrow K^+K^-\pi^-$ branching fraction.

NODE=S086P54;LINKAGE=A

[2] AAIJ 21G reports this branching ratio for $q^2 < 7$ GeV^2 as $(1.66 \pm 0.08 \pm 0.07 \pm 0.05) \times 10^{-3}$ and for $q^2 > 7$ GeV^2 as $(3.25 \pm 0.21 {}^{+0.16}_{-0.17} \pm 0.09) \times 10^{-3}$.

NODE=S086P54;LINKAGE=B

$\Gamma(K^-\mu^+\nu_\mu)/\Gamma_{total}$ Γ_{15}/Γ

NODE=S086P55

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.06±0.05±0.08	[1] AAIJ	21G	LHCB	pp at 8 TeV

[1] The total systematic error includes D_s^- branching fractions, B_s^0 lifetime, $|V_{cb}|$, and $B_s^0 \rightarrow D_s^-$ form factor integral uncertainties.

NODE=S086P55;LINKAGE=A

$\Gamma(D_s^-\pi^+)/\Gamma_{total}$ Γ_{16}/Γ

NODE=S086R3

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.98±0.13 OUR FIT					
[$(2.98 \pm 0.14) \times 10^{-3}$ OUR 2025 FIT]					
2.98±0.13 OUR AVERAGE					
[$(2.97 \pm 0.13) \times 10^{-3}$ OUR 2025 AVERAGE]					
2.96±0.10±0.09		[1] AAIJ	21Y	LHCB	pp at 7, 8, 13 TeV
3.4 ±0.5 ±0.2		[2] LOUVOT	09	BELL	$e^+e^- \rightarrow \Upsilon(5S)$
2.8 ±0.6 ±0.1		[3] ABULENCIA	07C	CDF	$p\overline{p}$ at 1.96 TeV

NEW

NEW

• • • We do not use the following data for averages, fits, limits, etc. • • •

$2.95\pm0.05^{+0.25}_{-0.28}$		[4] AAIJ	12AG	LHCB	Repl. by AAIJ 21Y
$6.8 \pm2.2 \pm1.6$		DRUTSKOY	07A	BELL	Repl. by LOUVOT 09
$3.3 \pm1.1 \pm0.1$		[5] ABULENCIA	06J	CDF	Repl. by ABULENCIA 07C
<130	6	[6] AKERS	94J	OPAL	$e^+e^- \to Z$
seen	1	BUSKULIC	93G	ALEP	$e^+e^- \to Z$

[1] AAIJ 21Y reports $[\Gamma(B^0_s \to D^-_s\pi^+)/\Gamma_{\rm total}] / [B(B^0 \to D^-\pi^+)] = 1.18 \pm 0.04$ which we multiply by our best (shown rounded) value $B(B^0 \to D^-\pi^+) = (2.51 \pm 0.08) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R3;LINKAGE=C

[2] LOUVOT 09 reports $(3.67^{+0.35}_{-0.33}{}^{+0.65}_{-0.645}) \times 10^{-3}$ from a measurement of $[\Gamma(B^0_s \to D^-_s\pi^+)/\Gamma_{\rm total}] \times [B(\Upsilon(10860) \to B^{(*)}_s\overline{B}^{(*)}_s)]$ assuming $B(\Upsilon(10860) \to B^{(*)}_s\overline{B}^{(*)}_s) = (19.5 \pm 2.6) \times 10^{-2}$, which we rescale to our best (shown rounded) value $B(\Upsilon(10860) \to B^{(*)}_s\overline{B}^{(*)}_s) = (21.3 \pm 1.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R3;LINKAGE=LO

[3] ABULENCIA 07C reports $[\Gamma(B^0_s \to D^-_s\pi^+)/\Gamma_{\rm total}] / [B(B^0 \to D^-\pi^+)] = 1.13 \pm 0.08 \pm 0.23$ which we multiply by our best (shown rounded) value $B(B^0 \to D^-\pi^+) = (2.51 \pm 0.08) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R3;LINKAGE=AB

[4] AAIJ 12AG reports $(2.95 \pm 0.05 \pm 0.17^{+0.18}_{-0.22}) \times 10^{-3}$ where the last uncertainty comes from the semileptonic f_s/f_d measurement. We combined the systematics in quadrature. NODE=S086R3;LINKAGE=AI

[5] ABULENCIA 06J reports $[\Gamma(B^0_s \to D^-_s\pi^+)/\Gamma_{\rm total}] / [B(B^0 \to D^-\pi^+)] = 1.32 \pm 0.18 \pm 0.38$ which we multiply by our best (shown rounded) value $B(B^0 \to D^-\pi^+) = (2.51 \pm 0.08) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R3;LINKAGE=AL

[6] AKERS 94J sees ≤ 6 events and measures the limit on the product branching fraction $f(\overline{b} \to B^0_s)\cdot B(B^0_s \to D^-_s\pi^+) < 1.3\%$ at CL = 90%. We divide by our current value $B(\overline{b} \to B^0_s) = 0.105$. NODE=S086R3;LINKAGE=A

$\Gamma(D^-_s\rho^+)/\Gamma(D^-_s\pi^+)$ — Γ_{17}/Γ_{16}

NODE=S086P41
NODE=S086P41

VALUE	DOCUMENT ID		TECN	COMMENT
2.3±0.4±0.2	LOUVOT	10	BELL	$e^+e^- \to \Upsilon(5S)$

$\Gamma(D^-_s\pi^+\pi^+\pi^-)/\Gamma_{\rm total}$ — Γ_{18}/Γ

NODE=S086R30
NODE=S086R30

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
6.1±1.0 OUR FIT				
6.3±1.4±0.6	[1] ABULENCIA	07C	CDF	$p\overline{p}$ at 1.96 TeV

[1] ABULENCIA 07C reports $[\Gamma(B^0_s \to D^-_s\pi^+\pi^+\pi^-)/\Gamma_{\rm total}] / [B(B^0 \to D^-\pi^+\pi^+\pi^-)] = 1.05 \pm 0.10 \pm 0.22$ which we multiply by our best (shown rounded) value $B(B^0 \to D^-\pi^+\pi^+\pi^-) = (6.0 \pm 0.6) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R30;LINKAGE=AB

$\Gamma(D^-_s\pi^+\pi^+\pi^-)/\Gamma(D^-_s\pi^+)$ — Γ_{18}/Γ_{16}

NODE=S086R55
NODE=S086R55

VALUE	DOCUMENT ID		TECN	COMMENT
2.05±0.33 OUR FIT				
2.01±0.37±0.20	AAIJ	11E	LHCB	pp at 7 TeV

$\Gamma(D_{s1}(2536)^-\pi^+,\ D^-_{s1} \to D^-_s\pi^+\pi^-)/\Gamma(D^-_s\pi^+\pi^+\pi^-)$ — Γ_{19}/Γ_{18}

NODE=S086R58
NODE=S086R58

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
4.0±1.0±0.4	AAIJ	12AX	LHCB	pp at 7 TeV

$\Gamma(D^{\mp}_s K^{\pm})/\Gamma_{\rm total}$ — Γ_{20}/Γ

NODE=S086R35
NODE=S086R35

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
2.25±0.12 OUR FIT				
$2.2\ ^{+1.1}_{-1.0}$ OUR AVERAGE $[(2.3^{+1.2}_{-1.1}) \times 10^{-4}$ OUR 2025 AVERAGE]				
$2.2\ ^{+1.1}_{-0.9}\ ^{+0.2}_{-0.1}$	[1] LOUVOT	09	BELL	$e^+e^- \to \Upsilon(5S)$

NEW

[1] LOUVOT 09 reports $(2.4^{+1.2}_{-1.0} \pm 0.42) \times 10^{-4}$ from a measurement of $[\Gamma(B^0_s \to D^{\mp}_s K^{\pm})/\Gamma_{total}] \times [B(\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s)]$ assuming $B(\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s) = (19.5 \pm 2.6) \times 10^{-2}$, which we rescale to our best (shown rounded) value $B(\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s) = (21.3 \pm 1.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R35;LINKAGE=LO

$\Gamma(D_{s1}(2536)^{\mp} K^{\pm},\ D^-_{s1} \to \overline{D}^*(2007)^0 K^-)/\Gamma_{total}$ Γ_{21}/Γ

NODE=S086P77
NODE=S086P77

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
2.48±0.18±0.22	[1] AAIJ 23AY	LHCB	pp at 7, 8, 13 TeV

[1] AAIJ 23AY reports $[\Gamma(B^0_s \to D_{s1}(2536)^{\mp} K^{\pm},\ D^-_{s1} \to \overline{D}^*(2007)^0 K^-)/\Gamma_{total}] / [B(B^0 \to \overline{D}^0 K^+ K^-)] = 0.409 \pm 0.019 \pm 0.022$ which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^0 K^+ K^-) = (6.1 \pm 0.5) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P77;LINKAGE=A

$\Gamma(D^{\mp}_s K^{\pm})/\Gamma(D^-_s \pi^+)$ Γ_{20}/Γ_{16}

NODE=S086R38
NODE=S086R38

VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT
7.55±0.24 OUR FIT			
7.55±0.24 OUR AVERAGE			
7.52±0.15±0.19	AAIJ 15AC	LHCB	pp at 7, 8 TeV
9.7 ±1.8 ±0.9	AALTONEN 09AQ	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
6.46±0.43±0.25	AAIJ 12AG	LHCB	Repl. by AAIJ 15AC

$\Gamma(D^-_s K^+ \pi^+ \pi^-)/\Gamma(D^-_s \pi^+ \pi^+ \pi^-)$ Γ_{22}/Γ_{18}

NODE=S086R57
NODE=S086R57

VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT
5.2±0.5±0.3	AAIJ 12AX	LHCB	pp at 7 TeV

$\Gamma(D^+_s D^-_s)/\Gamma_{total}$ Γ_{23}/Γ

NODE=S086R32
NODE=S086R32

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
4.5±0.6 OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.		
4.0±0.2±0.5		[1] AAIJ 13AP	LHCB	pp at 7 TeV
$5.8^{+1.1}_{-0.9}\pm1.3$		[2] ESEN 13	BELL	$e^+ e^- \to \Upsilon(5S)$
6.1±0.9±0.7		[3] AALTONEN 12C	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$10.3^{+3.9}_{-3.2}{}^{+2.6}_{-2.5}$		[4] ESEN 10	BELL	Repl. by ESEN 13
12 ±4 ±1		[5] AALTONEN 08F	CDF	Repl. by AALTONEN 12C
<67	90	DRUTSKOY 07A	BELL	Repl. by ESEN 10

[1] Uses $B(B^0 \to D^- D^+_s) = (7.2 \pm 0.8) \times 10^{-3}$.

NODE=S086R32;LINKAGE=AI

[2] Use $\Upsilon(5S) \to B^*_s \overline{B}^*_s$ decays assuming $B(\Upsilon(5S) \to B^*_s \overline{B}^*_s) = (17.1 \pm 3.0)\%$ and $\Gamma(\Upsilon(5S) \to B^*_s \overline{B}^*_s) / \Gamma(\Upsilon(5S) \to B^{(*)}_s \overline{B}^{(*)}_s) = (87.0 \pm 1.7)\%$.

NODE=S086R32;LINKAGE=EN

[3] AALTONEN 12C reports $(f_s/f_d)\ (B(B^0_s \to D^+_s D^-_s) / B(B^0 \to D^- D^+_s)) = 0.183 \pm 0.021 \pm 0.017$. We multiply this result by our best value of $B(B^0 \to D^- D^+_s) = (8.1 \pm 0.6) \times 10^{-3}$ and divide by our best value of f_s/f_d, where $1/2\ f_s/f_d = 0.1230 \pm 0.0115$. Our first quoted uncertainty is the combined experiment's uncertainty and our second is the systematic uncertainty from using out best values.

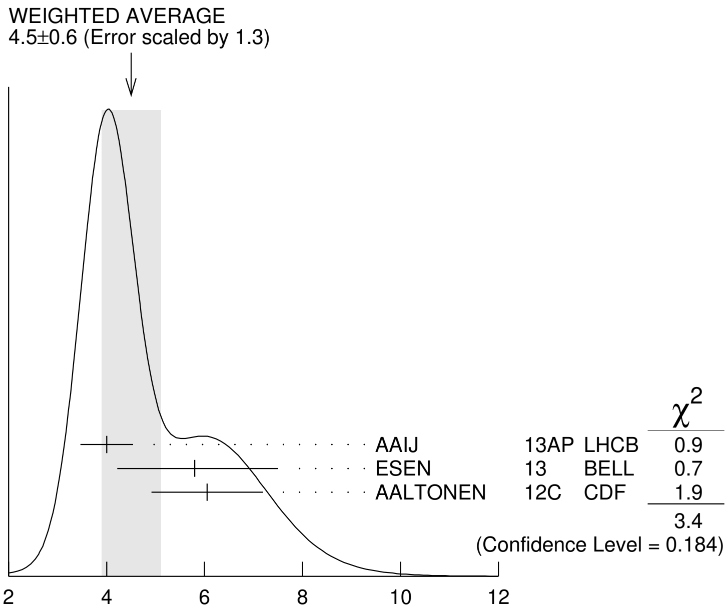
NODE=S086R32;LINKAGE=AL

[4] Uses $\Upsilon(10860) \to B^*_s \overline{B}^*_s$ assuming $B(\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s) = (19.3 \pm 2.9)\%$ and $\Gamma(\Upsilon(10860) \to B^*_s \overline{B}^*_s) / \Gamma(\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s) = (90.1^{+3.8}_{-4.0})\%$.

NODE=S086R32;LINKAGE=ES

[5] AALTONEN 08F reports $[\Gamma(B^0_s \to D^+_s D^-_s)/\Gamma_{total}] / [B(B^0 \to D^- D^+_s)] = 1.44^{+0.48}_{-0.44}$ which we multiply by our best (shown rounded) value $B(B^0 \to D^- D^+_s) = (8.1 \pm 0.6) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R32;LINKAGE=AA



$\Gamma\left(D_s^+ D_s^-\right)/\Gamma_{\text{total}}$ (units 10^{-3})

$\Gamma(D_s^- D^+)/\Gamma_{\text{total}}$ Γ_{24}/Γ

NODE=S086R73
NODE=S086R73

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
3.1±0.4±0.2	[1] AAIJ	14AA	LHCB	pp at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3.6±0.6±0.5	[2] AAIJ	13AP	LHCB	Repl. by AAIJ 14AA

[1] AAIJ 14AA reports $[\Gamma(B_s^0 \to D_s^- D^+)/\Gamma_{\text{total}}]$ / $[B(B^0 \to D^- D_s^+)] = 0.038 \pm 0.004 \pm 0.003$ which we multiply by our best (shown rounded) value $B(B^0 \to D^- D_s^+) = (8.1 \pm 0.6) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.. NODE=S086R73;LINKAGE=A

[2] Uses $B(B^0 \to D^- D_s^+) = (7.2 \pm 0.8) \times 10^{-3}$. NODE=S086R73;LINKAGE=AI

$\Gamma(D^+ D^-)/\Gamma_{\text{total}}$ Γ_{25}/Γ

NODE=S086R74
NODE=S086R74

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
2.2±0.4±0.4	[1] AAIJ	13AP	LHCB	pp at 7 TeV

[1] Uses $B(B^0 \to D^- D^+) = (2.11 \pm 0.31) \times 10^{-4}$ and $B(B^+ \to \overline{D}^0 D_s^+) = (10.1 \pm 1.7) \times 10^{-3}$. NODE=S086R74;LINKAGE=AI

$\Gamma(D^0 \overline{D}^0)/\Gamma_{\text{total}}$ Γ_{29}/Γ

NODE=S086R75
NODE=S086R75

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.9±0.3±0.4	[1] AAIJ	13AP	LHCB	pp at 7 TeV

[1] Uses $B(B^0 \to D^- D^+) = (2.11 \pm 0.31) \times 10^{-4}$ and $B(B^+ \to \overline{D}^0 D_s^+) = (10.1 \pm 1.7) \times 10^{-3}$. NODE=S086R75;LINKAGE=AI

$\Gamma(D^{*+} D^{*-})/\Gamma_{\text{total}}$ Γ_{28}/Γ

NODE=S086P74
NODE=S086P74

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
$\mathbf{2.14 \pm 0.28^{+0.17}_{-0.16}}$	[1,2] AAIJ	23J	LHCB	pp at 7, 8, 13 TeV

[1] AAIJ 23J reports $[\Gamma(B_s^0 \to D^{*+} D^{*-})/\Gamma_{\text{total}}]$ / $[B(B^0 \to D^*(2010)^+ D^*(2010)^-)] = 0.269 \pm 0.032 \pm 0.011 \pm 0.008$ which we multiply by our best (shown rounded) value $B(B^0 \to D^*(2010)^+ D^*(2010)^-) = (8.0 \pm 0.6) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086P74;LINKAGE=A

[2] Uses average B_s^0 lifetime of 1.5215 ps. NODE=S086P74;LINKAGE=B

$\Gamma(D_s^{*-} \pi^+)/\Gamma(D_s^- \pi^+)$ Γ_{30}/Γ_{16}

NODE=S086P40
NODE=S086P40

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.65^{+0.15}_{-0.13} \pm 0.07}$	LOUVOT	10	BELL	$e^+ e^- \to \Upsilon(5S)$

$\Gamma(D_s^{*\mp} K^{\pm})/\Gamma(D_s^{*-}\pi^+)$ — Γ_{31}/Γ_{30}

NODE=S086P00

VALUE	DOCUMENT ID		TECN	COMMENT
$0.068\pm0.005^{+0.003}_{-0.002}$	AAIJ	15AD	LHCB	pp at 7, 8 TeV

$\Gamma(D_s^{*-}\rho^+)/\Gamma(D_s^-\pi^+)$ — Γ_{32}/Γ_{16}

NODE=S086P42

VALUE	DOCUMENT ID		TECN	COMMENT
$3.2\pm0.6\pm0.3$	LOUVOT	10	BELL	$e^+e^- \to \Upsilon(5S)$

$\Gamma(D_s^{*-}\rho^+)/\Gamma(D_s^-\rho^+)$ — Γ_{32}/Γ_{17}

NODE=S086R42

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.4\pm0.3\pm0.1$	[1] LOUVOT	10	BELL	$e^+e^- \to \Upsilon(5S)$

[1] Not independent of other LOUVOT 10 measurements. NODE=S086R42;LINKAGE=A

$\left[\Gamma(D_s^{*+}D_s^-)+\Gamma(D_s^{*-}D_s^+)\right]/\Gamma_{total}$ — Γ_{33}/Γ

NODE=S086R33

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
15.1±1.3 OUR AVERAGE					
$15.3\pm1.2\pm1.1$		[1] AAIJ	16P	LHCB	pp at 7 TeV
$17.6^{+2.3}_{-2.2}\pm4.0$		[2] ESEN	13	BELL	$e^+e^- \to \Upsilon(5S)$
$14.0\pm1.9\pm1.6$		[3] AALTONEN	12C	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$27.5^{+8.3}_{-7.1}\pm6.9$		[4] ESEN	10	BELL	Repl. by ESEN 13
<121	90	DRUTSKOY	07A	BELL	Repl. by ESEN 10

[1] AAIJ 16P reports $[\left[\Gamma(B_s^0 \to D_s^{*+}D_s^-)+\Gamma(D_s^{*-}D_s^+)\right]/\Gamma_{total}] / [B(B^0 \to D^- D_s^+)] = 1.88 \pm 0.08 \pm 0.12$ which we multiply by our best (shown rounded) value $B(B^0 \to D^- D_s^+) = (8.1\pm0.6)\times10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R33;LINKAGE=B

[2] Use $\Upsilon(5S) \to B_s^*\overline{B}_s^*$ decays assuming $B(\Upsilon(5S) \to B_s^*\overline{B}_s^*) = (17.1 \pm 3.0)\%$ and $\Gamma(\Upsilon(5S) \to B_s^*\overline{B}_s^*) / \Gamma(\Upsilon(5S) \to B_s^{(*)}\overline{B}_s^{(*)}) = (87.0 \pm 1.7)\%$. NODE=S086R33;LINKAGE=EN

[3] AALTONEN 12C reports (f_s/f_d) $(B(B_s^0 \to D_s^{*+}D_s^- + D_s^{*-}D_s^+) / B(B^0 \to D^- D_s^+)) = 0.424 \pm 0.046 \pm 0.035$. We multiply this result by our best value of $B(B^0 \to D^- D_s^+) = (8.1 \pm 0.6)\times10^{-3}$ and divide by our best value of f_s/f_d, where $1/2\ f_s/f_d = 0.1230\pm0.0115$. Our first quoted uncertainty is the combined experiment's uncertainty and our second is the systematic uncertainty from using out best values. NODE=S086R33;LINKAGE=AL

[4] Uses $\Upsilon(10860) \to B_s^*\overline{B}_s^*$ assuming $B(\Upsilon(10860) \to B_s^{(*)}\overline{B}_s^{(*)}) = (19.3 \pm 2.9)\%$ and $\Gamma(\Upsilon(10860) \to B_s^*\overline{B}_s^*) / \Gamma(\Upsilon(10860) \to B_s^{(*)}\overline{B}_s^{(*)}) = (90.1^{+3.8}_{-4.0})\%$. NODE=S086R33;LINKAGE=ES

$\Gamma(D_s^{*+}D_s^{*-})/\Gamma_{total}$ — Γ_{34}/Γ

NODE=S086R34

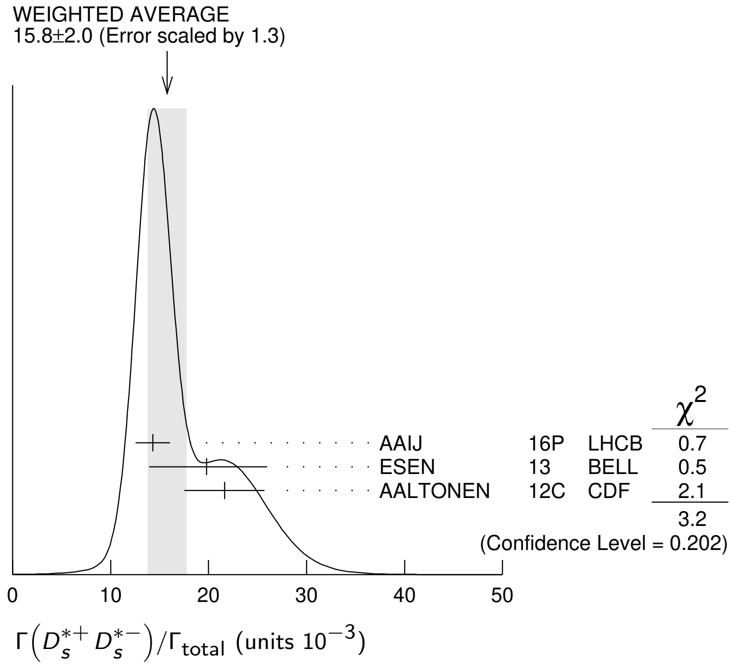
VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
15.8± 2.0 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.					
$14.3\pm1.4\pm1.0$		[1] AAIJ	16P	LHCB	pp at 7 TeV
$19.8^{+3.3+5.2}_{-3.1-5.0}$		[2] ESEN	13	BELL	$e^+e^- \to \Upsilon(5S)$
$21.6\pm3.2\pm2.5$		[3] AALTONEN	12C	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$30.8^{+12.2+8.5}_{-10.4-8.6}$		[4] ESEN	10	BELL	Repl. by ESEN 13
<257	90	DRUTSKOY	07A	BELL	Repl. by ESEN 10

[1] AAIJ 16P reports $[\Gamma(B_s^0 \to D_s^{*+}D_s^{*-})/\Gamma_{total}] / [B(B^0 \to D^- D_s^+)] = 1.76 \pm 0.11 \pm 0.14$ which we multiply by our best (shown rounded) value $B(B^0 \to D^- D_s^+) = (8.1 \pm 0.6)\times10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R34;LINKAGE=B

[2] Use $\Upsilon(5S) \to B_s^*\overline{B}_s^*$ decays assuming $B(\Upsilon(5S) \to B_s^*\overline{B}_s^*) = (17.1 \pm 3.0)\%$ and $\Gamma(\Upsilon(5S) \to B_s^*\overline{B}_s^*) / \Gamma(\Upsilon(5S) \to B_s^{(*)}\overline{B}_s^{(*)}) = (87.0 \pm 1.7)\%$. NODE=S086R34;LINKAGE=EN

[3] AALTONEN 12C reports (f_s/f_d) $(B(B_s^0 \to D_s^{*+}D_s^{*-}) / B(B^0 \to D^- D_s^+)) = 0.654 \pm 0.072 \pm 0.065$. We multiply this result by our best value of $B(B^0 \to D^- D_s^+) = (8.1 \pm 0.6)\times10^{-3}$ and divide by our best value of f_s/f_d, where $1/2\ f_s/f_d = 0.1230\pm0.0115$. Our first quoted uncertainty is the combined experiment's uncertainty and our second is the systematic uncertainty from using out best values. NODE=S086R34;LINKAGE=AL

[4] Uses $\Upsilon(10860) \rightarrow B_s^* \overline{B}_s^*$ assuming B($\Upsilon(10860) \rightarrow B_s^{(*)} \overline{B}_s^{(*)}$) = (19.3 ± 2.9)% and $\Gamma(\Upsilon(10860) \rightarrow B_s^* \overline{B}_s^*)$ / $\Gamma(\Upsilon(10860) \rightarrow B_s^{(*)} \overline{B}_s^{(*)}) = (90.1^{+3.8}_{-4.0})$%. NODE=S086R34;LINKAGE=ES



$\Gamma(D_s^{(*)+} D_s^{(*)-})/\Gamma_{total}$ — Γ_{35}/Γ

NODE=S086R23
NODE=S086R23

→ UNCHECKED ←

VALUE (%)	CL%	DOCUMENT ID	TECN	COMMENT
4.5 ±1.4 OUR EVALUATION		(Produced by HFLAV)		
3.66±0.29 OUR AVERAGE				
3.45±0.25±0.24		[1] AAIJ 16P	LHCB	pp at 7 TeV
$4.32^{+0.42}_{-0.39}{}^{+1.04}_{-1.03}$		[2] ESEN 13	BELL	$e^+ e^- \rightarrow \Upsilon(5S)$
4.2 ±0.5 ±0.5		[3] AALTONEN 12C	CDF	$p\overline{p}$ at 1.96 TeV
3.5 ±1.0 ±1.1		[4] ABAZOV 09I	D0	$p\overline{p}$ at 1.96 TeV
14 ±6 ±3		[5,6] BARATE 00K	ALEP	$e^+ e^- \rightarrow Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$6.85^{+1.53}_{-1.30}{}^{+1.79}_{-1.80}$		[7,8] ESEN 10	BELL	Repl. by ESEN 13
$3.9^{+1.9}_{-1.7}{}^{+1.6}_{-1.5}$		[4] ABAZOV 07Y	D0	Repl. by ABAZOV 09I
<0.218	90	BARATE 98Q	ALEP	$e^+ e^- \rightarrow Z$

[1] AAIJ 16P reports [$\Gamma(B_s^0 \rightarrow D_s^{(*)+} D_s^{(*)-})/\Gamma_{total}$] / [B($B^0 \rightarrow D^- D_s^+$)] = 4.24 ± 0.14 ± 0.27 which we multiply by our best (shown rounded) value B($B^0 \rightarrow D^- D_s^+$) = $(8.1 \pm 0.6) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R23;LINKAGE=A

[2] Use $\Upsilon(5S) \rightarrow B_s^* \overline{B}_s^*$ decays assuming B($\Upsilon(5S) \rightarrow B_s^* \overline{B}_s^*$) = (17.1 ± 3.0)% and $\Gamma(\Upsilon(5S) \rightarrow B_s^* \overline{B}_s^*)$ / $\Gamma(\Upsilon(5S) \rightarrow B_s^{(*)} \overline{B}_s^{(*)})$ = (87.0 ± 1.7)%. NODE=S086R23;LINKAGE=EN

[3] AALTONEN 12C reports (f_s/f_d) (B($B_s^0 \rightarrow D_s^{(*)+} D_s^{(*)-}$) / B($B^0 \rightarrow D^- D_s^+$)) = 1.261 ± 0.095 ± 0.112. We multiply this result by our best value of B($B^0 \rightarrow D^- D_s^+$) = $(8.1 \pm 0.6) \times 10^{-3}$ and divide by our best value of f_s/f_d, where $1/2\ f_s/f_d = 0.1230 \pm 0.0115$. Our first quoted uncertainty is the combined experiment's uncertainty and our second is the systematic uncertainty from using out best values. NODE=S086R23;LINKAGE=AL

[4] Uses the final states where $D_s^+ \rightarrow \phi \pi^+$ and $D_s^- \rightarrow \phi \mu^- \overline{\nu}_\mu$. NODE=S086R23;LINKAGE=AB

[5] Reports B(B_s^0(short) $\rightarrow D_s^{(*)} D_s^{(*)}$) = (0.23 ± 0.10 ± 0.05) · [0.17/B($D_s \rightarrow \phi \chi$)]^2 assuming B($B_s^0 \rightarrow B_s^0$(short)) = 50%. We use our best value of B($D_s \rightarrow \phi\chi$) = 15.7 ± 1.0% to obtain the quoted result. NODE=S086R23;LINKAGE=BA

[6] Uses $\phi\phi$ correlations from B_s^0(short) $\rightarrow D_s^{(*)+} D_s^{(*)-}$. NODE=S086R23;LINKAGE=KB

[7] Sum of exclusive $B_s \rightarrow D_s^+ D_s^-$, $B_s \rightarrow D_s^{*\pm} D_s^{\mp}$ and $B_s \rightarrow D_s^{*+} D_s^{*-}$. NODE=S086R23;LINKAGE=EE

[8] Uses $\Upsilon(10860) \rightarrow B_s^* \overline{B}_s^*$ assuming B($\Upsilon(10860) \rightarrow B_s^{(*)} \overline{B}_s^{(*)}$) = (19.3 ± 2.9)% and $\Gamma(\Upsilon(10860) \rightarrow B_s^* \overline{B}_s^*)$ / $\Gamma(\Upsilon(10860) \rightarrow B_s^{(*)} \overline{B}_s^{(*)}) = (90.1^{+3.8}_{-4.0})$%. NODE=S086R23;LINKAGE=ES

$\Gamma(D^{*-} D_s^+)/\Gamma_{total}$ — Γ_{36}/Γ

NODE=S086P60
NODE=S086P60

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
4.0±0.6±0.4	[1] AAIJ	21S	LHCB	pp at 13 TeV

[1] AAIJ 21S reports $[\Gamma(B_s^0 \to D^{*-} D_s^+)/\Gamma_{total}] / [B(B^0 \to D^*(2010)^- D_s^+)] = 0.049 \pm 0.006 \pm 0.0036$ which we multiply by our best (shown rounded) value $B(B^0 \to D^*(2010)^- D_s^+) = (8.2 \pm 0.8) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P60;LINKAGE=A

$[\Gamma(D^{*+} D^-) + \Gamma(D^{*-} D^+)]/\Gamma_{total}$ — $(\Gamma_{26}+\Gamma_{27})/\Gamma$

NODE=S086P57
NODE=S086P57

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
8.4±1.1±0.8	[1] AAIJ	21N	LHCB	pp at 7, 8, 13 TeV

[1] AAIJ 21N reports $[[\Gamma(B_s^0 \to D^{*+} D^-) + \Gamma(B_s^0 \to D^{*-} D^+)]/\Gamma_{total}] / [B(B^0 \to D^\pm D^{*\mp} (CP\text{-averaged}))] = 0.137 \pm 0.017 \pm 0.006$ which we multiply by our best (shown rounded) value $B(B^0 \to D^\pm D^{*\mp} (CP\text{-averaged})) = (6.1 \pm 0.6) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P57;LINKAGE=A

$\Gamma(\overline{D}^{*0} \overline{K}^0)/\Gamma_{total}$ — Γ_{37}/Γ

NODE=S086P20
NODE=S086P20

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
2.8±1.0±0.5	[1] AAIJ	16C	LHCB	pp at 7, 8 TeV

[1] Measured and normalized to the $B_s^0 \to \overline{D}^{*0} K_S^0$ decay with $f_s/f_d = 0.259 \pm 0.015$. Signal significance is 4.4 standard deviations.

NODE=S086P20;LINKAGE=A

$\Gamma(\overline{D}^0 \overline{K}^0)/\Gamma_{total}$ — Γ_{38}/Γ

NODE=S086P19
NODE=S086P19

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
4.3±0.5±0.7	[1] AAIJ	16C	LHCB	pp at 7, 8 TeV

[1] Measured and normalized to the $B^0 \to \overline{D}^0 K_S^0$ decay with $f_s/f_d = 0.259 \pm 0.015$.

NODE=S086P19;LINKAGE=A

$\Gamma(\overline{D}^0 K^- \pi^+)/\Gamma_{total}$ — Γ_{39}/Γ

NODE=S086R65
NODE=S086R65

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
10.4±1.1±0.5	[1] AAIJ	13AQ	LHCB	pp at 7 TeV

[1] AAIJ 13AQ reports $[\Gamma(B_s^0 \to \overline{D}^0 K^- \pi^+)/\Gamma_{total}] / [B(B^0 \to \overline{D}^0 \pi^+ \pi^-)] = 1.18 \pm 0.05 \pm 0.12$ which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^0 \pi^+ \pi^-) = (8.8 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R65;LINKAGE=AA

$\Gamma(\overline{D}^*(2007)^0 K^- \pi^+)/\Gamma_{total}$ — Γ_{40}/Γ

NODE=S086P62
NODE=S086P62

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
7.3±0.6±2.5	[1] AAIJ	22N	LHCB	pp at 13 TeV

[1] AAIJ 22N reports $[\Gamma(B_s^0 \to \overline{D}^*(2007)^0 K^- \pi^+)/\Gamma_{total}] / [B(B^0 \to \overline{D}^*(2007)^0 \pi^+ \pi^-)] = 1.178 \pm 0.029 \pm 0.091 \pm 0.037$ which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^*(2007)^0 \pi^+ \pi^-) = (6.2 \pm 2.2) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P62;LINKAGE=B

$\Gamma(\overline{D}^0 \overline{K}^*(892)^0)/\Gamma_{total}$ — Γ_{41}/Γ

NODE=S086R52
NODE=S086R52

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
4.4 ±0.6 OUR AVERAGE				
4.29±0.09±0.65	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV
4.7 ±1.2 ±0.3	[2] AAIJ	11D	LHCB	pp at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3.5 ±0.4 ±0.4	[3] AAIJ	13BX	LHCB	Repl. by AAIJ 14BH

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R52;LINKAGE=A

[2] AAIJ 11D reports $[\Gamma(B_s^0 \to \overline{D}^0 \overline{K}^*(892)^0)/\Gamma_{total}] / [B(B^0 \to \overline{D}^0 \rho^0)] = 1.48 \pm 0.34 \pm 0.19$ which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^0 \rho^0) = (3.21 \pm 0.21) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R52;LINKAGE=AA

[3] AAIJ 13BX reports $[\Gamma(B_s^0 \to \overline{D}^0 \overline{K}^*(892)^0)/\Gamma_{total}] / [B(B^0 \to \overline{D}^0 K^*(892)^0)] = 7.8 \pm 0.7 \pm 0.3 \pm 0.6$ which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^0 K^*(892)^0) = (4.5 \pm 0.6) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R52;LINKAGE=AI

$\Gamma(\overline{D}^0 \overline{K}^*(1410))/\Gamma_{total}$ Γ_{42}/Γ

NODE=S086R84
NODE=S086R84

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
38.6±11.4±33.3	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R84;LINKAGE=A

$\Gamma(\overline{D}^0 \overline{K}_0^*(1430))/\Gamma_{total}$ Γ_{43}/Γ

NODE=S086R85
NODE=S086R85

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
30.0±2.4±6.8	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays. Corresponds to the resonant $K_0^*(1430)$ part of LASS parametrization.

NODE=S086R85;LINKAGE=A

$\Gamma(\overline{D}^0 \overline{K}_2^*(1430))/\Gamma_{total}$ Γ_{44}/Γ

NODE=S086R86
NODE=S086R86

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
11.1±1.8±3.8	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R86;LINKAGE=A

$\Gamma(\overline{D}^0 \overline{K}^*(1680))/\Gamma_{total}$ Γ_{45}/Γ

NODE=S086R87
NODE=S086R87

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<7.8	90	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R87;LINKAGE=A

$\Gamma(\overline{D}^0 \overline{K}_0^*(1950))/\Gamma_{total}$ Γ_{46}/Γ

NODE=S086R88
NODE=S086R88

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<11	90	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R88;LINKAGE=A

$\Gamma(\overline{D}^0 \overline{K}_3^*(1780))/\Gamma_{total}$ Γ_{47}/Γ

NODE=S086R89
NODE=S086R89

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<2.6	90	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R89;LINKAGE=A

$\Gamma(\overline{D}^0 \overline{K}_4^*(2045))/\Gamma_{total}$ Γ_{48}/Γ

NODE=S086R90
NODE=S086R90

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<3.1	90	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R90;LINKAGE=A

$\Gamma(\overline{D}^0 K^- \pi^+ \text{(non-resonant)})/\Gamma_{total}$ Γ_{49}/Γ

NODE=S086R91
NODE=S086R91

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
20.6±3.8±7.3	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays. Corresponds to the non-resonant part of the LASS parametrization.

NODE=S086R91;LINKAGE=A

$\Gamma([K^+ K^-]_D \overline{K}^*(892)^0)/\Gamma(\overline{D}^0 \overline{K}^*(892)^0)$ Γ_{50}/Γ_{41}

NODE=S086P81
NODE=S086P81

VALUE	DOCUMENT ID		TECN	COMMENT
1.000±0.034±0.016	AAIJ	24M	LHCB	pp at 7, 8, 13 TeV

$\Gamma([\pi^+ \pi^-]_D \overline{K}^*(892)^0)/\Gamma(\overline{D}^0 \overline{K}^*(892)^0)$ Γ_{51}/Γ_{41}

NODE=S086P82
NODE=S086P82

VALUE	DOCUMENT ID		TECN	COMMENT
0.996±0.057±0.023	AAIJ	24M	LHCB	pp at 7, 8, 13 TeV

$\Gamma([\pi^+ \pi^- \pi^+ \pi^-]_D \overline{K}^*(892)^0)/\Gamma(\overline{D}^0 \overline{K}^*(892)^0)$ Γ_{54}/Γ_{41}

NODE=S086P83
NODE=S086P83

VALUE	DOCUMENT ID		TECN	COMMENT
1.010±0.048±0.033	AAIJ	24M	LHCB	pp at 7, 8, 13 TeV

$\Gamma(D_{s2}^*(2573)^- \pi^+,\ D_{s2}^* \to \overline{D}^0 K^-)/\Gamma_{total}$ Γ_{57}/Γ

NODE=S086R92
NODE=S086R92

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
25.7±0.7±4.0	[1] AAIJ	14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B_s^0 \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R92;LINKAGE=A

$\Gamma(D^*_{s1}(2700)^- \pi^+,\ D^*_{s1} \to \overline{D}^0 K^-)/\Gamma_{total}$ Γ_{58}/Γ

NODE=S086R93

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
1.6±0.4±0.7	[1] AAIJ 14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B^0_s \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R93;LINKAGE=A

$\Gamma(D^*_{s1}(2860)^- \pi^+,\ D^*_{s1} \to \overline{D}^0 K^-)/\Gamma_{total}$ Γ_{59}/Γ

NODE=S086R94

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
5.0±1.2±3.4	[1] AAIJ 14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B^0_s \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R94;LINKAGE=A

$\Gamma(D^*_{s3}(2860)^- \pi^+,\ D^*_{s3} \to \overline{D}^0 K^-)/\Gamma_{total}$ Γ_{60}/Γ

NODE=S086R95

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
2.2±0.1±0.6	[1] AAIJ 14BH	LHCB	pp at 7, 8 TeV

[1] Uses Dalitz plot analysis of $B^0_s \to \overline{D}^0 K^- \pi^+$ decays.

NODE=S086R95;LINKAGE=A

$\Gamma(\overline{D}^0 K^+ K^-)/\Gamma_{total}$ Γ_{61}/Γ

NODE=S086R03

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
5.6±0.7±0.5	[1] AAIJ 18AZ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
5.5±2.0±0.5	[2,3] AAIJ 12AM	LHCB	Repl. by AAIJ 18AZ

[1] AAIJ 18AZ reports $[\Gamma(B^0_s \to \overline{D}^0 K^+ K^-)/\Gamma_{total}]$ / $[B(B^0 \to \overline{D}^0 K^+ K^-)]$ = 0.930 ± 0.089 ± 0.069 which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^0 K^+ K^-) = (6.1 \pm 0.5) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R03;LINKAGE=E

[2] AAIJ 12AM reports $[\Gamma(B^0_s \to \overline{D}^0 K^+ K^-)/\Gamma_{total}]$ / $[B(B^0 \to \overline{D}^0 K^+ K^-)] = 0.90 \pm 0.27 \pm 0.20$ which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^0 K^+ K^-) = (6.1 \pm 0.5) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R03;LINKAGE=AA

[3] Uses $B(b \to B^0_s)/B(b \to B^0) = 0.267^{+0.023}_{-0.020}$ measured by the same authors.

NODE=S086R03;LINKAGE=AI

$\Gamma(\overline{D}^0 f_0(980))/\Gamma_{total}$ Γ_{62}/Γ

NODE=S086P14

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<3.1 × 10⁻⁶	90	AAIJ 15AG	LHCB	pp at 7, 8 TeV

$\Gamma(\overline{D}^0 \phi)/\Gamma_{total}$ Γ_{63}/Γ

NODE=S086P39

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
2.30±0.10±0.23	[1] AAIJ 23AZ	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
3.0 ±0.4 ±0.2	[2] AAIJ 18AY	LHCB	Repl. by AAIJ 23AZ

[1] AAIJ 23AZ result's last uncertainty includes the uncertainty of the branching fraction of $B(B^0 \to \overline{D}^0 K^+ K^-)$ and of f_s/f_d ratio.

NODE=S086P39;LINKAGE=D

[2] AAIJ 18AY reports $[\Gamma(B^0_s \to \overline{D}^0 \phi)/\Gamma_{total}]$ / $[B(B^0 \to \overline{D}^0 \pi^+ \pi^-)] = (3.4 \pm 0.4 \pm 0.3) \times 10^{-2}$ which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^0 \pi^+ \pi^-) = (8.8 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P39;LINKAGE=A

$\Gamma(\overline{D}^0 \phi)/\Gamma(\overline{D}^0 \overline{K}^*(892)^0)$ Γ_{63}/Γ_{41}

NODE=S086R76

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.069±0.013±0.007	AAIJ 13BX	LHCB	Repl. by AAIJ 18AY

$\Gamma(\overline{D}^{*0} \phi)/\Gamma_{total}$ Γ_{64}/Γ

NODE=S086P38

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
3.17±0.16±0.32	[1] AAIJ 23AZ	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
3.7 ±0.6 ±0.2	[2] AAIJ 18AY	LHCB	Repl. by AAIJ 23AZ

[1] AAIJ 23AZ result's last uncertainty includes the uncertainties of the branching fraction of $B(B^0 \to \overline{D}^0 K^+ K^-)$ and of f_s/f_d ratio.

NODE=S086P38;LINKAGE=C

[2] AAIJ 18AY reports $[\Gamma(B^0_s \to \overline{D}^{*0} \phi)/\Gamma_{total}]$ / $[B(B^0 \to \overline{D}^0 \pi^+ \pi^-)] = (4.2 \pm 0.5 \pm 0.4) \times 10^{-2}$ which we multiply by our best (shown rounded) value $B(B^0 \to \overline{D}^0 \pi^+ \pi^-) = (8.8 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P38;LINKAGE=B

$\Gamma(D^{*\mp}\pi^{\pm})/\Gamma_{total}$ Γ_{65}/Γ

NODE=S086R70

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.1 × 10^{-6}	90	[1] AAIJ	13AL	LHCB	pp at 7 TeV

[1] Uses $f_s/f_d = 0.256 \pm 0.020$ and B($B^0 \to D^{*-}\pi^+$) = $(2.76 \pm 0.13) \times 10^{-3}$.

NODE=S086R70;LINKAGE=AA

$\Gamma(\eta_c\phi)/\Gamma_{total}$ Γ_{66}/Γ

NODE=S086P28

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
5.01±0.53±0.68	[1] AAIJ	17U	LHCB	pp at 7, 8 TeV

[1] The last uncertainty includes the limited knowledge of the external branching fractions where the η_c is reconstructed in the $p\overline{p}$,$K^+K^-\pi^+\pi^-$, $\pi^+\pi^-\pi^+\pi^-$, and $K^+K^-K^+K^-$ decays and $\phi(1020) \to K^+K^-$.

NODE=S086P28;LINKAGE=A

$\Gamma(\eta_c\pi^+\pi^-)/\Gamma_{total}$ Γ_{68}/Γ

NODE=S086P29

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.76±0.59±0.31	[1] AAIJ	17U	LHCB	pp at 7, 8 TeV

[1] The last uncertainty includes the limited knowledge of the external branching fractions where the η_c is reconstructed in the $p\overline{p}$,$K^+K^-\pi^+\pi^-$, $\pi^+\pi^-\pi^+\pi^-$, and $K^+K^-K^+K^-$ decays. The significance of the signal, including systematic uncertainties, is 4.6 standard deviations.

NODE=S086P29;LINKAGE=A

$\Gamma(J/\psi(1S)\phi)/\Gamma_{total}$ Γ_{69}/Γ

NODE=S086R6

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.01 ±0.04 OUR FIT					
[$(1.03 \pm 0.04) \times 10^{-3}$ OUR 2025 FIT]					
1.02 ±0.04 OUR AVERAGE					
[$(1.03 \pm 0.04) \times 10^{-3}$ OUR 2025 AVERAGE]					
1.016±0.031±0.022		[1] AAIJ	21Y	LHCB	pp at 7, 8, 13 TeV
1.25 ±0.07 ±0.23		[2] THORNE	13	BELL	$e^+e^- \to \Upsilon(5S)$
1.5 ±0.5 ±0.1		[3] ABE	96Q	CDF	$p\overline{p}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.050±0.013±0.104		[4] AAIJ	13AN	LHCB	Repl. by AAIJ 21Y
<6	1	[5] AKERS	94J	OPAL	$e^+e^- \to Z$
seen	14	[6] ABE	93F	CDF	$p\overline{p}$ at 1.8 TeV
seen	1	[7] ACTON	92N	OPAL	Sup. by AKERS 94J

NEW

NEW

[1] AAIJ 21Y reports $[\Gamma(B^0_s \to J/\psi(1S)\phi)/\Gamma_{total}] \times [B(\phi(1020) \to K^+K^-)] = (5.01 \pm 0.16 \pm 0.17) \times 10^{-4}$ from a measurement of $[\Gamma(B^0_s \to J/\psi(1S)\phi)/\Gamma_{total}] \times [B(\phi(1020) \to K^+K^-)] / [B(B^+ \to J/\psi(1S)K^+)]$ assuming $B(B^+ \to J/\psi(1S)K^+) = (1.003 \pm 0.035) \times 10^{-3}$, which we rescale to our best (shown rounded) values $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$, $B(B^+ \to J/\psi(1S)K^+) = (1.019 \pm 0.019) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=S086R6;LINKAGE=E

[2] THORNE 13 uses $f_s = (17.2 \pm 3.0)$% as the fraction of $\Upsilon(5S)$ decaying to $B_s^{(*)}\overline{B}_s^{(*)}$.

NODE=S086R6;LINKAGE=TH

[3] ABE 96Q reports $[\Gamma(B^0_s \to J/\psi(1S)\phi)/\Gamma_{total}] \times [\Gamma(\overline{b} \to B^0_s \,\mathrm{at}\, Z)/[\Gamma(\overline{b} \to B^+ \,\mathrm{at}\, Z) + \Gamma(\overline{b} \to B^0 \,\mathrm{at}\, Z)]] = (0.185 \pm 0.055 \pm 0.020) \times 10^{-3}$ which we divide by our best (shown rounded) value $\Gamma(\overline{b} \to B^0_s \,\mathrm{at}\, Z)/[\Gamma(\overline{b} \to B^+ \,\mathrm{at}\, Z) + \Gamma(\overline{b} \to B^0 \,\mathrm{at}\, Z)] = 0.1230 \pm 0.0115$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R6;LINKAGE=BE

[4] AAIJ 13AN uses $f_s/f_d = 0.256 \pm 0.020$ and $B(B^+ \to J/\psi K^+) = (10.18 \pm 0.42) \times 10^{-4}$.

NODE=S086R6;LINKAGE=AI

[5] AKERS 94J sees one event and measures the limit on the product branching fraction $f(\overline{b} \to B^0_s) \cdot B(B^0_s \to J/\psi(1S)\phi) < 7 \times 10^{-4}$ at CL = 90%. We divide by $B(\overline{b} \to B^0_s) = 0.112$.

NODE=S086R6;LINKAGE=B

[6] ABE 93F measured using $J/\psi(1S) \to \mu^+\mu^-$ and $\phi \to K^+K^-$.

NODE=S086R6;LINKAGE=A

[7] In ACTON 92N a limit on the product branching fraction is measured to be $f(\overline{b} \to B^0_s) \cdot B(B^0_s \to J/\psi(1S)\phi) \le 0.22 \times 10^{-2}$.

NODE=S086R6;LINKAGE=AA

$\Gamma(J/\psi(1S)\phi\phi)/\Gamma(J/\psi(1S)\phi)$ Γ_{70}/Γ_{69}

NODE=S086P21

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
$1.15 \pm 0.12^{+0.05}_{-0.09}$	128	[1] AAIJ	16U	LHCB	pp at 7, 8 TeV

[1] Uses $J/\psi \to \mu^+\mu^-$, $\phi \to K^+K^-$ decays, and observes 128 ± 13 events of $B^0_s \to J/\psi\phi\phi$.

NODE=S086P21;LINKAGE=A

$\Gamma(J/\psi(1S)\pi^0)/\Gamma_{total}$ — Γ_{71}/Γ

NODE=S086R19
NODE=S086R19

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.21 × 10^{-5}	90	[1] KUMAR	24	BELL	$e^+e^- \rightarrow \Upsilon(5S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.2 \times 10^{-3}$	90	[2] ACCIARRI	97C	L3	

[1] KUMAR 24 uses $f_s = (22.0^{+2.0}_{-2.1})$% as the fraction of $\Upsilon(5S)$ decaying to $B_s^{(*)}\overline{B}_s^{(*)}$. NODE=S086R19;LINKAGE=A

[2] ACCIARRI 97C assumes B^0 production fraction (39.5 ± 4.0%) and B_s (12.0 ± 3.0%). NODE=S086R19;LINKAGE=CQ

$\Gamma(J/\psi(1S)\eta)/\Gamma_{total}$ — Γ_{72}/Γ

NODE=S086R20
NODE=S086R20

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
4.45±0.25 OUR FIT Error includes scale factor of 1.1.					
4.3 ±0.7 OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below. [(4.0 ± 0.7) × 10^{-4} OUR 2025 AVERAGE Scale factor = 1.4] NEW					
5.7 ±0.5 ±0.9		[1,2] AAIJ	25AN	LHCB	pp at 7, 8, 13 TeV OCCUR=2
$3.6\ ^{+0.5}_{-0.6}\ ^{+0.3}_{-0.2}$		[3] AAIJ	13A	LHCB	pp at 7 TeV
$5.10\pm0.50^{+1.17}_{-0.83}$		[4] LI	12	BELL	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<38	90	[5] ACCIARRI	97C	L3	

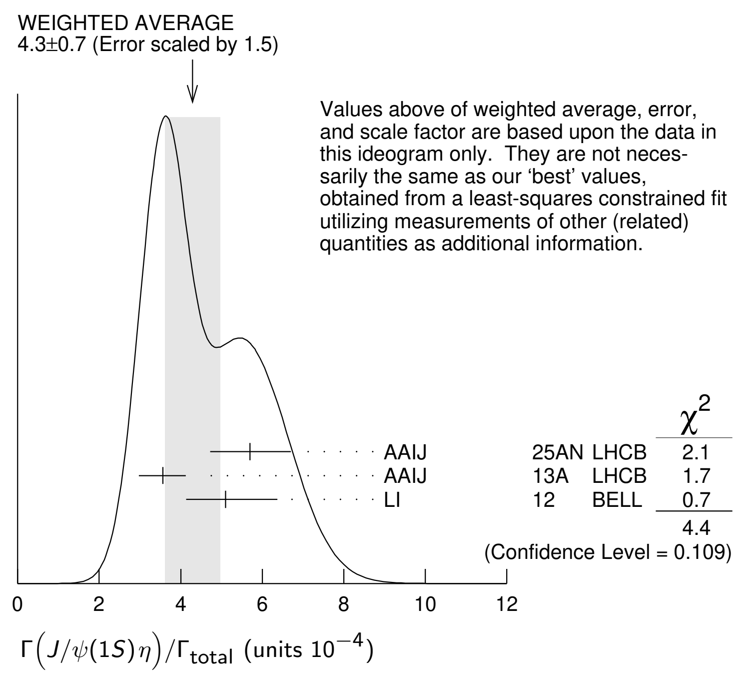
[1] AAIJ 25AN reports B($B^0 \rightarrow J/\psi\eta$)/B($B_s^0 \rightarrow J/\psi\eta$) = (2.16 ± 0.16 ± 0.05 ± 0.07) × 10^{-2} where the last uncertainty is due to f_s/f_d ratio. We use the inverse of this branching ratio to obtain the listed value. NODE=S086R20;LINKAGE=B

[2] AAIJ 25AN reports [$\Gamma(B_s^0 \rightarrow J/\psi(1S)\eta)/\Gamma_{total}$] / [B($B^0 \rightarrow J/\psi(1S)\eta$)] = 46.3 ± 3.4 ± 1.8 which we multiply by our best (shown rounded) value B($B^0 \rightarrow J/\psi(1S)\eta$) = (1.23 ± 0.19) × 10^{-5}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R20;LINKAGE=C

[3] AAIJ 13A reports [$\Gamma(B_s^0 \rightarrow J/\psi(1S)\eta)/\Gamma_{total}$] / [B($B^0 \rightarrow J/\psi(1S)\rho^0$)] = $14.0 \pm 1.2^{+1.1}_{-1.5}{}^{+1.1}_{-1.0}$ which we multiply by our best (shown rounded) value B($B^0 \rightarrow J/\psi(1S)\rho^0$) = $(2.55^{+0.18}_{-0.16}) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R20;LINKAGE=AA

[4] Observed for the first time with significances over 10 σ. The second error are total systematic uncertainties including the error on N($B_s^{(*)}\overline{B}_s^{(*)}$). NODE=S086R20;LINKAGE=LI

[5] ACCIARRI 97C assumes B^0 production fraction (39.5 ± 4.0%) and B_s (12.0 ± 3.0%). NODE=S086R20;LINKAGE=CQ



$\Gamma(J/\psi(1S)\eta)/\Gamma(J/\psi(1S)\phi)$ — Γ_{72}/Γ_{69}

NODE=S086P93
NODE=S086P93

VALUE (units 10^{-1})	DOCUMENT ID		TECN	COMMENT
4.39±0.22 OUR FIT Error includes scale factor of 1.1.				
4.50±0.14±0.21	[1] AAIJ	25AN	LHCB	pp at 7, 8 and 13 TeV

[1] The last uncertainty combines the systematic uncertainty with branching fraction uncertainties. NODE=S086P93;LINKAGE=A

$\Gamma(J/\psi(1S)K^0_S)/\Gamma_{total}$ Γ_{73}/Γ

NODE=S086R46
NODE=S086R46

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
1.92±0.14 OUR AVERAGE			
1.92±0.14±0.05	[1] AAIJ 15AL	LHCB	pp at 7, 8 TeV
2.0 ±0.4 ±0.2	[2] AALTONEN 11A	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
1.99±0.16±0.07	[3] AAIJ 13AB	LHCB	Repl. by AAIJ 15AL
$1.99^{+0.26}_{-0.25}$±0.07	[4] AAIJ 12O	LHCB	Repl. by AAIJ 13AB

OCCUR=2

[1] AAIJ 15AL reports $[\Gamma(B^0_s \to J/\psi(1S)K^0_S)/\Gamma_{total}]$ / $[B(B^0 \to J/\psi(1S)K^0_S)] = (4.31 \pm 0.17 \pm 0.12 \pm 0.25) \times 10^{-2}$ which we multiply by our best (shown rounded) value $B(B^0 \to J/\psi(1S)K^0_S) = (4.45 \pm 0.11) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R46;LINKAGE=AJ

[2] AALTONEN 11A reports $[\Gamma(B^0_s \to J/\psi(1S)K^0_S)/\Gamma_{total}] \times [B(\overline{b} \to B^0_s \text{ at } Z)]$ / $[B(\overline{b} \to B^0 \text{ at } Z)]$ / $[B(B^0 \to J/\psi(1S)K^0_S)] = (1.09 \pm 0.19 \pm 0.11) \times 10^{-2}$ which we multiply or divide by our best values $B(\overline{b} \to B^0_s \text{ at } Z) = (10.0 \pm 0.8) \times 10^{-2}$, $B(\overline{b} \to B^0 \text{ at } Z) = (40.8 \pm 0.7) \times 10^{-2}$, $B(B^0 \to J/\psi(1S)K^0_S) = 1/2 \times B(B^0 \to J/\psi(1S)K^0) = 1/2 \times (8.91 \pm 0.21) \times 10^{-4}$. Our firs t error is their experiment's error and our second error is the systematic error from using our best values. NODE=S086R46;LINKAGE=AA

[3] AAIJ 13AB reports $(1.97 \pm 0.14 \pm 0.07 \pm 0.15 \pm 0.08) \times 10^{-5}$ from a measurement of $[\Gamma(B^0_s \to J/\psi(1S)K^0_S)/\Gamma_{total}]$ / $[B(B^0 \to J/\psi(1S)K^0)] \times [\Gamma(\overline{b} \to B^0_s \text{ at } pp)/\Gamma(\overline{b} \to B^0 \text{ at } pp)]$ assuming $B(B^0 \to J/\psi(1S)K^0) = (8.98 \pm 0.35) \times 10^{-4}$, $\Gamma(\overline{b} \to B^0_s \text{ at } pp)/\Gamma(\overline{b} \to B^0 \text{ at } pp) = 0.256 \pm 0.020$, which we rescale to our best (shown rounded) values $B(B^0 \to J/\psi(1S)K^0) = (8.91 \pm 0.21) \times 10^{-4}$, $\Gamma(\overline{b} \to B^0_s \text{ at } pp)/\Gamma(\overline{b} \to B^0 \text{ at } pp) = 0.251 \pm 0.007$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=S086R46;LINKAGE=A

[4] AAIJ 12O reports $(1.83 \pm 0.21 \pm 0.10 \pm 0.14 \pm 0.07) \times 10^{-5}$ from a measurement of $[\Gamma(B^0_s \to J/\psi(1S)K^0_S)/\Gamma_{total}]$ / $[B(B^0 \to J/\psi(1S)K^0)] \times [\Gamma(\overline{b} \to B^0_s \text{ at } pp)/\Gamma(\overline{b} \to B^0 \text{ at } pp)]$ assuming $B(B^0 \to J/\psi(1S)K^0) = (8.71 \pm 0.32) \times 10^{-4}$, $\Gamma(\overline{b} \to B^0_s \text{ at } pp)/\Gamma(\overline{b} \to B^0 \text{ at } pp) = 0.267^{+0.021}_{-0.02}$, which we rescale to our best (shown rounded) values $B(B^0 \to J/\psi(1S)K^0) = (8.91 \pm 0.21) \times 10^{-4}$, $\Gamma(\overline{b} \to B^0_s \text{ at } pp)/\Gamma(\overline{b} \to B^0 \text{ at } pp) = 0.251 \pm 0.007$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=S086R46;LINKAGE=AI

$\Gamma(J/\psi(1S)\overline{K}^*(892)^0)/\Gamma_{total}$ Γ_{74}/Γ

NODE=S086R47
NODE=S086R47

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
3.95±0.24 OUR AVERAGE [$(4.1 \pm 0.4) \times 10^{-5}$ OUR 2025 AVERAGE]			
3.95±0.19±0.14	[1] AAIJ 25AQ	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
3.90±0.20±0.14	[2] AAIJ 25AQ	LHCB	pp at 13 TeV
4.14±0.18±0.35	[3] AAIJ 15AV	LHCB	Repl. by AAIJ 25AQ
4.4 $^{+0.5}_{-0.4}$ ±0.8	[4] AAIJ 12AP	LHCB	Repl. by AAIJ 15AV
9 ±4 ±1	[5] AALTONEN 11A	CDF	$p\overline{p}$ at 1.96 TeV

NEW
OCCUR=3
OCCUR=4

[1] AAIJ 25AQ reports $[\Gamma(B^0_s \to J/\psi(1S)\overline{K}^*(892)^0)/\Gamma_{total}]$ / $[B(B^0 \to J/\psi(1S)K^*(892)^0)] = (3.12 \pm 0.09 \pm 0.06 \pm 0.10) \times 10^{-2}$ which we multiply by our best (shown rounded) value $B(B^0 \to J/\psi(1S)K^*(892)^0) = (1.27 \pm 0.05) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R47;LINKAGE=H

[2] AAIJ 25AQ reports $[\Gamma(B^0_s \to J/\psi(1S)\overline{K}^*(892)^0)/\Gamma_{total}]$ / $[B(B^0 \to J/\psi(1S)K^*(892)^0)] = (3.08 \pm 0.11 \pm 0.06 \pm 0.10) \times 10^{-2}$ which we multiply by our best (shown rounded) value $B(B^0 \to J/\psi(1S)K^*(892)^0) = (1.27 \pm 0.05) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R47;LINKAGE=I

[3] AAIJ 15AV result combines two measurements with different normalizing modes of $B^0 \to J/\psi K^*(892)^0$ and $B^0_s \to J/\psi\phi$. NODE=S086R47;LINKAGE=A

[4] AAIJ 12AP reports $B(B^0_s \to J/\psi(1S)\overline{K}^*(892)^0)/B(B^0 \to J/\psi(1S)K^*(892)^0) = (3.43^{+0.34}_{-0.36} \pm 0.50) \times 10^{-2}$ and $B(B^0 \to J/\psi(1S)K^*(892)^0) = (1.29 \pm 0.05 \pm 0.13) \times 10^{-3}$ after correcting for the contribution from $K\pi$ S-wave beneath the K^* peak. NODE=S086R47;LINKAGE=AI

[5] AALTONEN 11A reports $[\Gamma(B^0_s \to J/\psi(1S)\overline{K}^*(892)^0)/\Gamma_{total}] \times [B(\overline{b} \to B^0_s \text{ at } Z)]$ / $[B(\overline{b} \to B^0 \text{ at } Z)]$ / $[B(B^0 \to J/\psi(1S)K^*(892)^0)] = 0.0168 \pm 0.0024 \pm 0.0068$ which we multiply or divide by our best (shown rounded) values $B(\overline{b} \to B^0_s \text{ at } Z) = (10.0 \pm$ NODE=S086R47;LINKAGE=AA

0.8) $\times 10^{-2}$, B($\overline{b} \to B^0$ at Z) = (40.8 ± 0.7) $\times 10^{-2}$, B($B^0 \to J/\psi(1S) K^*(892)^0$) = (1.27 ± 0.05) $\times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

$\Gamma(J/\psi(1S)\eta')/\Gamma_{total}$ — Γ_{75}/Γ

NODE=S086R01
NODE=S086R01

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
3.53±0.22 OUR FIT Error includes scale factor of 1.1.			
3.3 ±0.4 OUR AVERAGE			
$3.2\ ^{+0.4}_{-0.5}\ \pm 0.2$	[1] AAIJ 13A	LHCB	pp at 7 TeV
$3.71 \pm 0.61\ ^{+0.85}_{-0.60}$	[2] LI 12	BELL	$e^+e^- \to \Upsilon(4S)$

[1] AAIJ 13A reports $[\Gamma(B_s^0 \to J/\psi(1S)\eta')/\Gamma_{total}]$ / $[B(B^0 \to J/\psi(1S)\rho^0)]$ = $12.7 \pm 1.1\ ^{+0.5}_{-1.3}\ ^{+1.0}_{-0.9}$ which we multiply by our best (shown rounded) value $B(B^0 \to J/\psi(1S)\rho^0) = (2.55^{+0.18}_{-0.16}) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R01;LINKAGE=AA

[2] Observed for the first time with significances over 10 σ. The second error are total systematic uncertainties including the error on N($B_s^{(*)}\overline{B}_s^{(*)}$). NODE=S086R01;LINKAGE=LI

$\Gamma(J/\psi(1S)\eta')/\Gamma(J/\psi(1S)\eta)$ — Γ_{75}/Γ_{72}

NODE=S086R02
NODE=S086R02

VALUE	DOCUMENT ID	TECN	COMMENT
0.793±0.028 OUR FIT			
0.797±0.028 OUR AVERAGE [0.87 ± 0.06 OUR 2025 AVERAGE] (NEW)			
0.80 ±0.02 ±0.02	[1] AAIJ 25AN	LHCB	pp at 7, 8 and 13 TeV
0.73 ±0.14 ±0.02	[2] LI 12	BELL	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.902±0.072±0.045	[3] AAIJ 15D	LHCB	Repl. by AAIJ 25AN
$0.90\ \pm 0.09\ ^{+0.06}_{-0.02}$	[2] AAIJ 13A	LHCB	Repl. by AAIJ 15D

[1] The last uncertainty combines the systematic uncertainty with branching fraction uncertainties. NODE=S086R02;LINKAGE=C

[2] Strongly correlated with measurements of $\Gamma(J/\psi(1S)\eta)/\Gamma$ and $\Gamma(J/\psi(1S)\eta')/\Gamma$ reported in the same reference. NODE=S086R02;LINKAGE=SC

[3] Uses $J/\psi \to \mu^+\mu^-$, $\eta' \to \rho^0\gamma$, and $\eta' \to \eta\pi^+\pi^-$ decays. NODE=S086R02;LINKAGE=AA

$\Gamma(J/\psi(1S)\pi^+\pi^-)/\Gamma(J/\psi(1S)\phi)$ — Γ_{76}/Γ_{69}

NODE=S086R04
NODE=S086R04

VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT
19.8±1.5 OUR FIT Error includes scale factor of 2.2. [(19.7 ± 1.5) $\times 10^{-2}$ OUR 2025 FIT Scale factor = 2.2] (NEW)			
20.3±0.7 OUR AVERAGE [(20.2 ± 0.7) $\times 10^{-2}$ OUR 2025 AVERAGE] (NEW)			
20.3±0.7±0.2	[1] AAIJ 12AO	LHCB	pp at 7 TeV

[1] AAIJ 12AO reports (19.79 ± 0.47 ± 0.52) $\times 10^{-2}$ from a measurement of $[\Gamma(B_s^0 \to J/\psi(1S)\pi^+\pi^-)/\Gamma(B_s^0 \to J/\psi(1S)\phi)]$ / $[B(\phi(1020) \to K^+K^-)]$ assuming $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$, which we rescale to our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R04;LINKAGE=AA

$\Gamma(J/\psi(1S) f_0(500),\ f_0 \to \pi^+\pi^-)/\Gamma(J/\psi(1S) f_0(980),\ f_0 \to \pi^+\pi^-)$ — Γ_{77}/Γ_{79}

NODE=S086RA1
NODE=S086RA1

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.034	90	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis. NODE=S086RA1;LINKAGE=AA

$\Gamma(J/\psi(1S)\rho,\ \rho \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ — Γ_{78}/Γ_{76}

NODE=S086RA2
NODE=S086RA2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.017	90	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis. NODE=S086RA2;LINKAGE=AA

$\Gamma(J/\psi(1S) f_0(980),\ f_0 \to \pi^+\pi^-)/\Gamma_{total}$ — Γ_{79}/Γ

NODE=S086R44
NODE=S086R44

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
1.23±0.15 OUR FIT Error includes scale factor of 2.1. [(1.24 ± 0.15) $\times 10^{-4}$ OUR 2025 FIT Scale factor = 2.1] (NEW)			
$\mathbf{1.16^{+0.31}_{-0.19}\,^{+0.30}_{-0.25}}$	[1] LI 11	BELL	$e^+e^- \to \Upsilon(5S)$

[1] The second error includes both the detector systematic and the uncertainty in the number of produced $Y(5S) \to B_s^{(*)}\overline{B}_s^{(*)}$ pairs. NODE=S086R44;LINKAGE=LI

$\Gamma\big(J/\psi(1S)\, f_0(980),\ f_0 \to \pi^+\pi^-\big)/\Gamma\big(J/\psi(1S)\phi\big)$ Γ_{79}/Γ_{69}

NODE=S086R53
NODE=S086R53

VALUE	DOCUMENT ID	TECN	COMMENT
$0.121^{+0.013}_{-0.015}$ OUR FIT Error includes scale factor of 2.4. [$0.120^{+0.013}_{-0.015}$ OUR 2025 FIT Scale factor = 2.4]			
$0.113^{+0.020}_{-0.018}$ OUR AVERAGE Error includes scale factor of 2.5. See the ideogram below. [$0.112^{+0.020}_{-0.018}$ OUR 2025 AVERAGE Scale factor = 2.5]			
$0.070 \pm 0.012 \pm 0.001$	[1] KHACHATRY... 16Q	CMS	pp at 7 TeV
$0.142^{+0.026}_{-0.014} \pm 0.002$	[2,3] AAIJ 12AO	LHCB	pp at 7 TeV
$0.138 \pm 0.037 \pm 0.002$	[4] ABAZOV 12C	D0	$p\overline{p}$ at 1.96 TeV
$0.129 \pm 0.012 \pm 0.001$	[5] AALTONEN 11AB	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.126^{+0.027}_{-0.023} \pm 0.001$	[6] AAIJ 11	LHCB	Repl. by AAIJ 12AO

NEW

NEW

[1] KHACHATRYAN 16Q reports $[\Gamma\big(B^0_s \to J/\psi(1S)\, f_0(980),\ f_0 \to \pi^+\pi^-\big)/\Gamma\big(B^0_s \to J/\psi(1S)\phi\big)]\ /\ [B(\phi(1020) \to K^+K^-)] = 0.140 \pm 0.008 \pm 0.023$ which we multiply by our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R53;LINKAGE=B

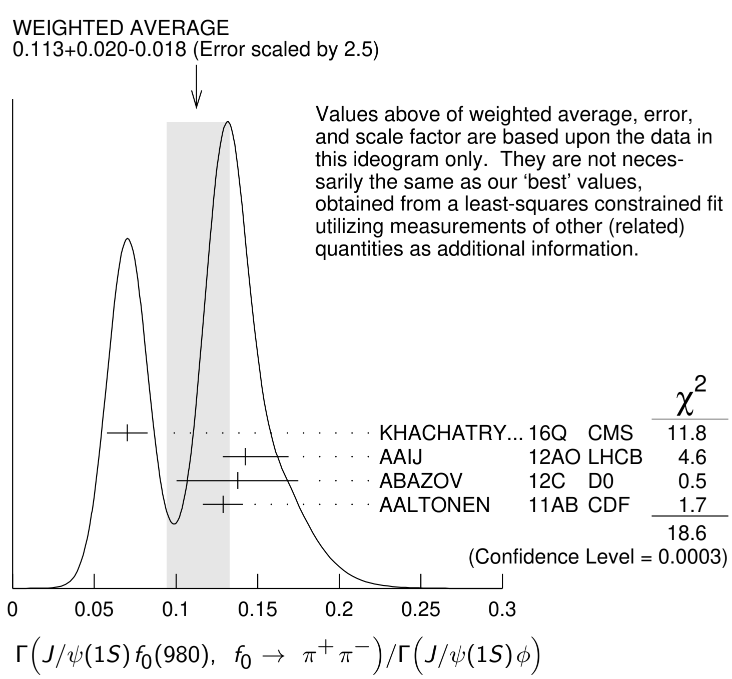
[2] AAIJ 12AO reports $(13.9 \pm 0.6^{+2.5}_{-1.2}) \times 10^{-2}$ from a measurement of $[\Gamma\big(B^0_s \to J/\psi(1S)\, f_0(980),\ f_0 \to \pi^+\pi^-\big)/\Gamma\big(B^0_s \to J/\psi(1S)\phi\big)]\ /\ [B(\phi(1020) \to K^+K^-)]$ assuming $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$, which we rescale to our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R53;LINKAGE=AJ

[3] Measured in Dalitz plot like analysis of $B_s \to J/\psi \pi^+\pi^-$ decays. NODE=S086R53;LINKAGE=DA

[4] ABAZOV 12C reports $[\Gamma\big(B^0_s \to J/\psi(1S)\, f_0(980),\ f_0 \to \pi^+\pi^-\big)/\Gamma\big(B^0_s \to J/\psi(1S)\phi\big)]\ /\ [B(\phi(1020) \to K^+K^-)] = 0.275 \pm 0.041 \pm 0.061$ which we multiply by our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R53;LINKAGE=AB

[5] AALTONEN 11AB reports $[\Gamma\big(B^0_s \to J/\psi(1S)\, f_0(980),\ f_0 \to \pi^+\pi^-\big)/\Gamma\big(B^0_s \to J/\psi(1S)\phi\big)]\ /\ [B(\phi(1020) \to K^+K^-)] = 0.257 \pm 0.020 \pm 0.014$ which we multiply by our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R53;LINKAGE=AA

[6] AAIJ 11 reports $[\Gamma\big(B^0_s \to J/\psi(1S)\, f_0(980),\ f_0 \to \pi^+\pi^-\big)/\Gamma\big(B^0_s \to J/\psi(1S)\phi\big)]\ /\ [B(\phi(1020) \to K^+K^-)] = 0.252^{+0.046}_{-0.032}{}^{+0.027}_{-0.033}$ which we multiply by our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R53;LINKAGE=AI



$\Gamma(J/\psi(1S) f_0(980),\ f_0 \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{79}/Γ_{76}

NODE=S086RA3
NODE=S086RA3

VALUE	DOCUMENT ID	TECN	COMMENT
0.61 $^{+0.05}_{-0.07}$ OUR FIT Error includes scale factor of 2.1. [$0.61^{+0.06}_{-0.07}$ OUR 2025 FIT Scale factor = 2.1]			
0.703±0.015$^{+0.004}_{-0.051}$	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

NEW

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RA3;LINKAGE=AA

$\Gamma(J/\psi(1S) f_2(1270),\ f_2 \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\phi)$ Γ_{80}/Γ_{69}

NODE=S086R05
NODE=S086R05

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
10 ±4 OUR AVERAGE [$(10 \pm 4) \times 10^{-4}$ OUR 2025 AVERAGE]			
10.0$^{+3.4}_{-3.7}$±0.1	[1,2] AAIJ 12AO	LHCB	pp at 7 TeV

NEW

[1] AAIJ 12AO reports $(0.098 \pm 0.033^{+0.006}_{-0.015}) \times 10^{-2}$ from a measurement of $[\Gamma(B^0_s \to J/\psi(1S) f_2(1270),\ f_2 \to \pi^+\pi^-)/\Gamma(B^0_s \to J/\psi(1S)\phi)]$ / $[B(\phi(1020) \to K^+K^-)]$ assuming $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$, which we rescale to our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R05;LINKAGE=AA

[2] Measured in Dalitz plot like analysis of $B_s \to J/\psi\pi^+\pi^-$ decays for the f_2 helicity state $\lambda = 0$.

NODE=S086R05;LINKAGE=DA

$\Gamma(J/\psi(1S) f_2(1270)_0,\ f_2 \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{81}/Γ_{76}

NODE=S086RA4
NODE=S086RA4

VALUE (%)	DOCUMENT ID	TECN	COMMENT
0.36±0.07±0.03	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RA4;LINKAGE=AA

$\Gamma(J/\psi(1S) f_2(1270)_{\parallel},\ f_2 \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{82}/Γ_{76}

NODE=S086RA5
NODE=S086RA5

VALUE (%)	DOCUMENT ID	TECN	COMMENT
0.52±0.15$^{+0.05}_{-0.02}$	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RA5;LINKAGE=AA

$\Gamma(J/\psi(1S) f_2(1270)_{\perp},\ f_2 \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{83}/Γ_{76}

NODE=S086RA6
NODE=S086RA6

VALUE (%)	DOCUMENT ID	TECN	COMMENT
0.63±0.34$^{+0.16}_{-0.08}$	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RA6;LINKAGE=AA

$\Gamma(J/\psi(1S) f_0(1370),\ f_0 \to \pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{84}/Γ

NODE=S086R45
NODE=S086R45

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.34^{+0.11}_{-0.14}{}^{+0.085}_{-0.054}$	[1] LI 11	BELL	$e^+e^- \to \Upsilon(5S)$

[1] The second error includes both the detector systematic and the uncertainty in the number of produced $Y(5S) \to B_s^{(*)}\overline{B}_s^{(*)}$ pairs.

NODE=S086R45;LINKAGE=LI

$\Gamma(J/\psi(1S) f_0(1370),\ f_0 \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\phi)$ Γ_{84}/Γ_{69}

NODE=S086R07
NODE=S086R07

VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT
4.29$^{+0.56}_{-3.83}$±0.05	[1,2] AAIJ 12AO	LHCB	pp at 7 TeV

[1] AAIJ 12AO reports $(4.19 \pm 0.53^{+0.12}_{-3.7}) \times 10^{-2}$ from a measurement of $[\Gamma(B^0_s \to J/\psi(1S) f_0(1370),\ f_0 \to \pi^+\pi^-)/\Gamma(B^0_s \to J/\psi(1S)\phi)]$ / $[B(\phi(1020) \to K^+K^-)]$ assuming $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$, which we rescale to our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R07;LINKAGE=AA

[2] Measured in Dalitz plot like analysis of $B_s \to J/\psi\pi^+\pi^-$ decays.

NODE=S086R07;LINKAGE=DA

$\Gamma(J/\psi(1S) f_0(1500),\ f_0 \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{85}/Γ_{76}

NODE=S086RA7
NODE=S086RA7

VALUE	DOCUMENT ID	TECN	COMMENT
0.101±0.008$^{+0.011}_{-0.003}$	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RA7;LINKAGE=AA

$\Gamma(J/\psi(1S) f_2'(1525)_0,\ f_2' \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{86}/Γ_{76}

NODE=S086RA8

VALUE (%)	DOCUMENT ID	TECN	COMMENT
$\mathbf{0.51 \pm 0.09^{+0.05}_{-0.04}}$	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RA8;LINKAGE=AA

$\Gamma(J/\psi(1S) f_2'(1525)_\parallel,\ f_2' \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{87}/Γ_{76}

NODE=S086RA9

VALUE (%)	DOCUMENT ID	TECN	COMMENT
$\mathbf{0.06^{+0.13}_{-0.04} \pm 0.01}$	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RA9;LINKAGE=AA

$\Gamma(J/\psi(1S) f_2'(1525)_\perp,\ f_2' \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{88}/Γ_{76}

NODE=S086RB0

VALUE (%)	DOCUMENT ID	TECN	COMMENT
$\mathbf{0.26 \pm 0.18^{+0.06}_{-0.04}}$	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RB0;LINKAGE=AA

$\Gamma(J/\psi(1S) f_0(1790),\ f_0 \to \pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{89}/Γ_{76}

NODE=S086RB1

VALUE	DOCUMENT ID	TECN	COMMENT
$\mathbf{0.024 \pm 0.004^{+0.050}_{-0.002}}$	[1] AAIJ 14BR	LHCB	pp at 7, 8 TeV

[1] Reported first of two solutions using the full Dalitz analysis.

NODE=S086RB1;LINKAGE=AA

$\Gamma(J/\psi(1S)\pi^+\pi^-\,(\text{nonresonant}))/\Gamma(J/\psi(1S)\phi)$ Γ_{90}/Γ_{69}

NODE=S086R06

VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT
$\mathbf{1.70^{+1.00}_{-0.33}}$ **OUR AVERAGE** $[(1.69^{+1.00}_{-0.33}) \times 10^{-2}$ OUR 2025 AVERAGE]			
$\mathbf{1.70^{+1.03}_{-0.33} \pm 0.02}$	[1,2] AAIJ 12AO	LHCB	pp at 7 TeV

NEW

[1] AAIJ 12AO reports $(1.66 \pm 0.31^{+0.96}_{-0.08}) \times 10^{-2}$ from a measurement of $[\Gamma(B_s^0 \to J/\psi(1S)\pi^+\pi^-(\text{nonresonant}))/\Gamma(B_s^0 \to J/\psi(1S)\phi)]$ / $[B(\phi(1020) \to K^+K^-)]$ assuming $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$, which we rescale to our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R06;LINKAGE=AA

[2] Measured in Dalitz plot like analysis of $B_s \to J/\psi\pi^+\pi^-$ decays.

NODE=S086R06;LINKAGE=DA

$\Gamma(J/\psi(1S)\overline{K}^0\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{91}/Γ

NODE=S086R82

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$\mathbf{<4.4 \times 10^{-5}}$	90	[1] AAIJ 14L	LHCB	pp at 7 TeV

[1] Measured with $B(B_s^0 \to J/\psi K_S^0\pi^+\pi^-)$ / $B(B^0 \to J/\psi K_S^0\pi^+\pi^-)$ using PDG 12 values for the involved branching fractions.

NODE=S086R82;LINKAGE=A

$\Gamma(J/\psi(1S)K^+K^-)/\Gamma_{\text{total}}$ Γ_{92}/Γ

NODE=S086R71

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
$\mathbf{7.9 \pm 0.7}$ **OUR AVERAGE**			
$7.70 \pm 0.08 \pm 0.72$	[1] AAIJ 13AN	LHCB	pp at 7 TeV
$10.1 \pm 0.9 \pm 2.1$	[2] THORNE 13	BELL	$e^+e^- \to \Upsilon(5S)$

[1] Uses $f_s/f_d = 0.256 \pm 0.020$ and $B(B^+ \to J/\psi K^+) = (10.18 \pm 0.42) \times 10^{-4}$.

NODE=S086R71;LINKAGE=AI

[2] Uses $f_s = (17.2 \pm 3.0)\%$ as the fraction of $\Upsilon(5S)$ decaying to $B_s^{(*)}\overline{B}_s^{(*)}$.

NODE=S086R71;LINKAGE=TH

$\Gamma(J/\psi(1S)K^0K^-\pi^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{93}/Γ

NODE=S086R80

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
$\mathbf{9.5 \pm 1.0 \pm 0.8}$	[1] AAIJ 14L	LHCB	pp at 7 TeV

[1] AAIJ 14L reports $[\Gamma(B_s^0 \to J/\psi(1S)K^0K^-\pi^+ + \text{c.c.})/\Gamma_{\text{total}}]$ / $[B(B^0 \to J/\psi(1S)K^0\pi^+\pi^-)] = 2.12 \pm 0.15 \pm 0.18$ which we multiply by our best (shown rounded) value $B(B^0 \to J/\psi(1S)K^0\pi^+\pi^-) = (4.5 \pm 0.4) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. This is an observation of $B_s^0 \to J/\psi K_S^0 K^\pm\pi^\mp$ with more than 10 standard deviations.

NODE=S086R80;LINKAGE=B

$\Gamma(J/\psi(1S)\overline{K}^0 K^+ K^-)/\Gamma_{total}$ — Γ_{94}/Γ

NODE=S086R81

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<12 × 10^{-6}	90	[1] AAIJ	14L	LHCB	pp at 7 TeV

[1] Measured with $B(B^0_s \to J/\psi K^0_S K^+ K^-)/B(B^0 \to J/\psi K^0_S \pi^+\pi^-)$ using PDG 12 values for the involved branching fractions. NODE=S086R81;LINKAGE=A

$\Gamma(J/\psi(1S) f'_2(1525))/\Gamma_{total}$ — Γ_{96}/Γ

NODE=S086R72

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
$2.61\pm0.20^{+0.56}_{-0.50}$	[1] AAIJ	13AN	LHCB	pp at 7 TeV

[1] Uses $f_s/f_d = 0.256 \pm 0.020$ and $B(B^+ \to J/\psi K^+) = (10.18 \pm 0.42) \times 10^{-4}$. NODE=S086R72;LINKAGE=AI

$\Gamma(J/\psi(1S) f'_2(1525))/\Gamma(J/\psi(1S)\phi)$ — Γ_{96}/Γ_{69}

NODE=S086R09

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
21 ±4 OUR AVERAGE				
21.5±4.9±2.6	[1] THORNE	13	BELL	$e^+e^- \to \Upsilon(5S)$
21 ±7 ±1	[2,3] ABAZOV	12AF	D0	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
27 ±4 ±1	[4] AAIJ	12S	LHCB	Repl. by AAIJ 13AN

[1] Uses $B(f'_2(1525) \to K^+K^-) = (44.4 \pm 1.1)\%$. NODE=S086R09;LINKAGE=TH

[2] ABAZOV 12AF reports $[\Gamma(B^0_s \to J/\psi(1S) f'_2(1525))/\Gamma(B^0_s \to J/\psi(1S)\phi)] \times B(f'_2(1525) \to K^+K^-) / B(\phi(1020) \to K^+K^-) = 0.19 \pm 0.05 \pm 0.04$ which we divide and multiply by our best values $B(f'_2(1525) \to K^+K^-) = \frac{1}{2}(88.8 \pm 2.2) \times 10^{-2}$, $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values. NODE=S086R09;LINKAGE=A1

[3] ABAZOV 12AF fits the invariant masses of the K^+K^- pair in the range $1.35 < M(K^+K^-) < 2$ GeV. NODE=S086R09;LINKAGE=A2

[4] AAIJ 12S reports $[(26.4 \pm 2.7 \pm 2.4) \times 10^{-2}$ from a measurement of $\Gamma(B^0_s \to J/\psi(1S) f'_2(1525))/\Gamma(B^0_s \to J/\psi(1S)\phi)] \times B(f'_2(1525) \to K^+K^-) / B(\phi(1020) \to K^+K^-)$ assuming $B(f'_2(1525) \to K^+K^-) = (44.4 \pm 1.1) \times 10^{-2}$, $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$, which we rescale to our best values $B(f'_2(1525) \to K^+K^-) = \frac{1}{2}(88.8 \pm 2.2) \times 10^{-2}$, $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values. NODE=S086R09;LINKAGE=AB

$\Gamma(J/\psi(1S) p\overline{p})/\Gamma_{total}$ — Γ_{97}/Γ

NODE=S086R60

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
3.58±0.19±0.39		[1] AAIJ	19U	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<4.8	90	[2] AAIJ	13Z	LHCB	Repl. by AAIJ 19U

[1] Measured relative to $B^0_s \to J/\psi\phi$ assuming $B(B^0_s \to J/\psi\phi) = (10.5 \pm 0.13 \pm 0.64) \times 10^{-4}$ and taking into account small K^+K^- S-wave contribution. NODE=S086R60;LINKAGE=B

[2] Uses $B(B^0_s \to J/\psi(1S)\pi^+\pi^-) = (1.98 \pm 0.20) \times 10^{-4}$. NODE=S086R60;LINKAGE=A

$\Gamma(J/\psi(1S)\gamma)/\Gamma_{total}$ — Γ_{98}/Γ

NODE=S086R00

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<7.3 × 10^{-6}	90	[1] AAIJ	15BB	LHCB	pp at 7, 8 TeV

[1] Branching fractions of normalization modes $B^0_s \to J/\psi\gamma X$ taken from PDG 14. Uses $f_s/f_d = 0.259 \pm 0.015$. NODE=S086R00;LINKAGE=A

$\Gamma(J/\psi\mu^+\mu^-,\ J/\psi \to \mu^+\mu^-)/\Gamma_{total}$ — Γ_{99}/Γ

NODE=S086P65

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.6 × 10^{-9}	95	AAIJ	22Q	LHCB	pp at 7, 8, 13 TeV

$\Gamma(J/\psi(1S)\pi^+\pi^-\pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ — Γ_{100}/Γ_{76}

NODE=S086R78

VALUE	DOCUMENT ID		TECN	COMMENT
0.371±0.015±0.022	[1] AAIJ	14Y	LHCB	pp at 7,8 TeV

[1] Excludes contributions from $\psi(2S)$ and $\chi_{c1}(3872)$ decaying to $J/\psi(1S)\pi^+\pi^-$. NODE=S086R78;LINKAGE=A

$\Gamma(J/\psi(1S) f_1(1285))/\Gamma_{total}$ Γ_{101}/Γ

NODE=S086R79
NODE=S086R79

VALUE (units 10^{-5})		DOCUMENT ID		TECN	COMMENT
7.2±1.3±0.4		[1] AAIJ	14Y	LHCB	pp at 7, 8 TeV

[1] AAIJ 14Y reports $(7.14 \pm 0.99^{+0.83}_{-0.91} \pm 0.41) \times 10^{-5}$ from a measurement of $[\Gamma(B^0_s \rightarrow J/\psi(1S) f_1(1285))/\Gamma_{total}] \times [B(f_1(1285) \rightarrow 2\pi^+ 2\pi^-)]$ assuming $B(f_1(1285) \rightarrow 2\pi^+ 2\pi^-) = 0.11^{+0.007}_{-0.006}$, which we rescale to our best (shown rounded) value $B(f_1(1285) \rightarrow 2\pi^+ 2\pi^-) = (10.9 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R79;LINKAGE=A

$\Gamma(J/\psi(1S)\overline{D}^0)/\Gamma_{total}$ Γ_{102}/Γ

NODE=S086P80
NODE=S086P80

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.0 × 10⁻⁶	90	AAIJ	24F	LHCB	pp at 7, 8, 13 TeV

$\Gamma(\psi(2S)\eta)/\Gamma(J/\psi(1S)\eta)$ Γ_{103}/Γ_{72}

NODE=S086R66
NODE=S086R66

VALUE	DOCUMENT ID		TECN	COMMENT
0.83±0.14±0.12	[1] AAIJ	13AA	LHCB	pp at 7 TeV

[1] Assuming lepton universality for dimuon decay modes of J/ψ and $\psi(2S)$ mesons, the ratio $B(J/\psi \rightarrow \mu^+\mu^-)/B(\psi(2S) \rightarrow \mu^+\mu^-) = B(J/\psi \rightarrow e^+e^-)/B(\psi(2S) \rightarrow e^+e^-) = 7.69 \pm 0.19$ was used.

NODE=S086R66;LINKAGE=AA

$\Gamma(\psi(2S)\eta')/\Gamma(J/\psi(1S)\eta')$ Γ_{104}/Γ_{75}

NODE=S086RA0
NODE=S086RA0

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
38.7±9.0±1.6	[1] AAIJ	15D	LHCB	pp at 7, 8 TeV

[1] Uses $J/\psi \rightarrow \mu^+\mu^-$, $\eta' \rightarrow \rho^0\gamma$, and $\eta' \rightarrow \eta\pi^+\pi^-$ decays.

NODE=S086RA0;LINKAGE=AA

$\Gamma(\psi(2S)\pi^+\pi^-)/\Gamma(J/\psi(1S)\pi^+\pi^-)$ Γ_{105}/Γ_{76}

NODE=S086R67
NODE=S086R67

VALUE	DOCUMENT ID		TECN	COMMENT
0.34±0.04±0.03	[1] AAIJ	13AA	LHCB	pp at 7 TeV

[1] Assuming lepton universality for dimuon decay modes of J/ψ and $\psi(2S)$ mesons, the ratio $B(J/\psi \rightarrow \mu^+\mu^-)/B(\psi(2S) \rightarrow \mu^+\mu^-) = B(J/\psi \rightarrow e^+e^-)/B(\psi(2S) \rightarrow e^+e^-) = 7.69 \pm 0.19$ was used.

NODE=S086R67;LINKAGE=AA

$\Gamma(\psi(2S)\phi)/\Gamma_{total}$ Γ_{106}/Γ

NODE=S086R4
NODE=S086R4

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	1	BUSKULIC	93G	ALEP	$e^+e^- \rightarrow Z$

$\Gamma(\psi(2S)\phi)/\Gamma(J/\psi(1S)\phi)$ Γ_{106}/Γ_{69}

NODE=S086R37
NODE=S086R37
NEW

VALUE	DOCUMENT ID		TECN	COMMENT
0.504±0.035 OUR AVERAGE				
[0.503 ± 0.035 OUR 2025 AVERAGE]				
0.501±0.034±0.014	[1,2] AAIJ	12L	LHCB	pp at 7 TeV
0.53 ±0.10 ±0.09	ABAZOV	09Y	D0	$p\overline{p}$ at 1.96 TeV
0.52 ±0.13 ±0.07	ABULENCIA	06N	CDF	$p\overline{p}$ at 1.96 TeV

[1] AAIJ 12L reports $0.489 \pm 0.026 \pm 0.021 \pm 0.012$ from a measurement of $[\Gamma(B^0_s \rightarrow \psi(2S)\phi)/\Gamma(B^0_s \rightarrow J/\psi(1S)\phi)] \times [B(J/\psi(1S) \rightarrow e^+e^-)]$ / $[B(\psi(2S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$,$B(\psi(2S) \rightarrow e^+e^-) = (7.72 \pm 0.17) \times 10^{-3}$, which we rescale to our best (shown rounded) values $B(J/\psi(1S) \rightarrow e^+e^-) = (5.971 \pm 0.032) \times 10^{-2}$, $B(\psi(2S) \rightarrow e^+e^-) = (7.95 \pm 0.22) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=S086R37;LINKAGE=AA

[2] Assumes $B(J/\psi \rightarrow \mu^+\mu^-)$ / $B(\psi(2S) \rightarrow \mu^+\mu^-) = B(J/\psi \rightarrow e^+e^-)$ / $B(\psi(2S) \rightarrow e^+e^-) = 7.69 \pm 0.19$.

NODE=S086R37;LINKAGE=AI

$\Gamma(\psi(2S)K^0)/\Gamma_{total}$ Γ_{107}/Γ

NODE=S086P63
NODE=S086P63

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
1.9±0.5±0.2	[1] TUMASYAN	22AI	CMS	pp at 13 TeV

[1] TUMASYAN 22AI reports $[\Gamma(B^0_s \rightarrow \psi(2S)K^0)/\Gamma_{total}]$ / $[B(B^0 \rightarrow \psi(2S)K^0)] = (3.33 \pm 0.69 \pm 0.11 \pm 0.34) \times 10^{-2}$ which we multiply by our best (shown rounded) value $B(B^0 \rightarrow \psi(2S)K^0) = (5.8 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P63;LINKAGE=B

$\Gamma(\psi(2S) K^- \pi^+)/\Gamma_{total}$ Γ_{108}/Γ

NODE=S086S02
NODE=S086S02

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
3.12±0.30±0.21	[1] AAIJ	15U	LHCB	pp at 7, 8 TeV

NODE=S086S02;LINKAGE=A

[1] AAIJ 15U reports $[\Gamma(B_s^0 \to \psi(2S) K^- \pi^+)/\Gamma_{total}]$ / $[B(B^0 \to \psi(2S) K^+ \pi^-)]$ = $(5.38 \pm 0.36 \pm 0.22 \pm 0.31) \times 10^{-2}$ which we multiply by our best (shown rounded) value $B(B^0 \to \psi(2S) K^+ \pi^-) = (5.8 \pm 0.4) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

$\Gamma(\psi(2S) \overline{K}^*(892)^0)/\Gamma_{total}$ Γ_{109}/Γ

NODE=S086S03
NODE=S086S03

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
$3.3 \pm 0.5^{+0.2}_{-0.3}$	[1] AAIJ	15U	LHCB	pp at 7, 8 TeV

NODE=S086S03;LINKAGE=A

[1] AAIJ 15U reports $[\Gamma(B_s^0 \to \psi(2S) \overline{K}^*(892)^0)/\Gamma_{total}]$ / $[B(B^0 \to \psi(2S) K^*(892)^0)]$ = $(5.58 \pm 0.57 \pm 0.40 \pm 0.32) \times 10^{-2}$ which we multiply by our best (shown rounded) value $B(B^0 \to \psi(2S) K^*(892)^0) = (5.9 \pm 0.4) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

$\Gamma(\chi_{c1} \phi)/\Gamma(J/\psi(1S) \phi)$ Γ_{110}/Γ_{69}

NODE=S086R68
NODE=S086R68

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
18.9±1.8±1.5	[1] AAIJ	13AC	LHCB	pp at 7 TeV

NODE=S086R68;LINKAGE=AA

[1] Uses $B(\chi_{c1} \to J/\psi \gamma) = (34.4 \pm 1.5)\%$.

$\Gamma(\chi_{c2} K^+ K^-)/\Gamma(\chi_{c1} K^+ K^-)$ $\Gamma_{112}/\Gamma_{111}$

NODE=S086P37
NODE=S086P37

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
17.1±3.1±1.0	[1] AAIJ	18AC	LHCB	pp at 7, 8, 13 TeV

NODE=S086P37;LINKAGE=A

[1] Measures the ratio for ± 15 MeV window around ϕ mass.

$\Gamma(\chi_{c1}(3872) \phi)/\Gamma(\psi(2S) \phi)$ $\Gamma_{113}/\Gamma_{106}$

NODE=S086P52
NODE=S086P52

VALUE	DOCUMENT ID		TECN	COMMENT
0.19±0.06 OUR AVERAGE				
0.19±0.02±0.06	[1] AAIJ	21C	LHCB	pp at 7, 8, 13 TeV
0.18±0.03±0.06	[2] SIRUNYAN	20BB	CMS	pp at 13 TeV

NODE=S086P52;LINKAGE=B

[1] AAIJ 21C reports $[\Gamma(B_s^0 \to \chi_{c1}(3872) \phi)/\Gamma(B_s^0 \to \psi(2S) \phi)] \times [B(\chi_{c1}(3872) \to \pi^+ \pi^- J/\psi(1S))]$ / $[B(\psi(2S) \to J/\psi(1S) \pi^+ \pi^-)]$ = $(2.42 \pm 0.23 \pm 0.07) \times 10^{-2}$ which we multiply or divide by our best (shown rounded) values $B(\chi_{c1}(3872) \to \pi^+ \pi^- J/\psi(1S)) = (4.3 \pm 1.4) \times 10^{-2}$, $B(\psi(2S) \to J/\psi(1S) \pi^+ \pi^-) = (34.78 \pm 0.33) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=S086P52;LINKAGE=A

[2] SIRUNYAN 20BB reports $[\Gamma(B_s^0 \to \chi_{c1}(3872) \phi)/\Gamma(B_s^0 \to \psi(2S) \phi)] \times [B(\chi_{c1}(3872) \to \pi^+ \pi^- J/\psi(1S))]$ / $[B(\psi(2S) \to J/\psi(1S) \pi^+ \pi^-)]$ = $(2.21 \pm 0.29 \pm 0.17) \times 10^{-2}$ which we multiply or divide by our best (shown rounded) values $B(\chi_{c1}(3872) \to \pi^+ \pi^- J/\psi(1S)) = (4.3 \pm 1.4) \times 10^{-2}$, $B(\psi(2S) \to J/\psi(1S) \pi^+ \pi^-)$ $= (34.78 \pm 0.33) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

$\Gamma(\chi_{c1}(3872) \pi^+ \pi^-)/\Gamma(\psi(2S) \pi^+ \pi^-)$ $\Gamma_{115}/\Gamma_{105}$

NODE=S086P70
NODE=S086P70

VALUE	DOCUMENT ID		TECN	COMMENT
0.54±0.09±0.17	[1] AAIJ	23AP	LHCB	pp at 7, 8, 13 TeV

NODE=S086P70;LINKAGE=A

[1] AAIJ 23AP reports $[\Gamma(B_s^0 \to \chi_{c1}(3872) \pi^+ \pi^-)/\Gamma(B_s^0 \to \psi(2S) \pi^+ \pi^-)] \times [B(\chi_{c1}(3872) \to \pi^+ \pi^- J/\psi(1S))]$ / $[B(\psi(2S) \to J/\psi(1S) \pi^+ \pi^-)]$ = $(6.8 \pm 1.1 \pm 0.2) \times 10^{-2}$ which we multiply or divide by our best (shown rounded) values $B(\chi_{c1}(3872) \to \pi^+ \pi^- J/\psi(1S)) = (4.3 \pm 1.4) \times 10^{-2}$, $B(\psi(2S) \to J/\psi(1S) \pi^+ \pi^-)$ $= (34.78 \pm 0.33) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

$\Gamma(J/\psi K^*(892)^0 \overline{K}^*(892)^0)/\Gamma(\psi(2S) \phi)$ Γ_{95}/Γ_{106}

NODE=S086P59
NODE=S086P59

VALUE	DOCUMENT ID		TECN	COMMENT
0.209±0.006±0.003	[1] AAIJ	21C	LHCB	pp at 7, 8, 13 TeV

NODE=S086P59;LINKAGE=A

[1] AAIJ 21C reports $\Gamma(B_s^0 \to J/\psi K^*(892)^0 \overline{K}^*(892)^0)/\Gamma(B_s^0 \to \psi(2S) \phi)$ $B^2(K^{*0} \to K^+ \pi^-)/B(\psi(2S) \to J/\psi \pi^+ \pi^-)/B(\phi \to K^+ K^-) = 1.22 \pm 0.03 \pm 0.04$ which we adjust with PDG 20 values of $B(K^{*0} \to K^+ \pi^-) = (99.902 \pm 0.009) \times 10^{-2}$, $B(\psi(2S) \to J/\psi \pi^+ \pi^-) = (34.68 \pm 0.30) \times 10^{-2}$, and $B(\phi \to K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$. The first uncertainty is the total experiment's one and the second is due to the adjustment branching fractions.

$\Gamma(\chi_{c1}(3872)(K^+K^-)_{non-\phi})/\Gamma(\chi_{c1}(3872)\phi)$ $\Gamma_{114}/\Gamma_{113}$

NODE=S086P58
NODE=S086P58

VALUE	DOCUMENT ID		TECN	COMMENT
0.79±0.17 OUR AVERAGE [0.78 ± 0.17 OUR 2025 AVERAGE]				
0.79±0.17±0.01	[1] AAIJ	21C	LHCB	pp at 7, 8, 13 TeV

NEW

[1] AAIJ 21C reports $[\Gamma(B^0_s \to \chi_{c1}(3872)(K^+K^-)_{non-\phi})/\Gamma(B^0_s \to \chi_{c1}(3872)\phi)]$ / $[B(\phi(1020) \to K^+K^-)] = 1.57 \pm 0.32 \pm 0.12$ which we multiply by our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086P58;LINKAGE=A

$\Gamma(\pi^+\pi^-)/\Gamma_{total}$ Γ_{116}/Γ

NODE=S086R15
NODE=S086R15

VALUE (units 10^{-7})	CL%	DOCUMENT ID		TECN	COMMENT
7.1±0.8 OUR AVERAGE					
[$(7.2 \pm 1.0) \times 10^{-7}$ OUR 2025 AVERAGE]					
7.3±0.9±0.2		[1] AAIJ	17G	LHCB	pp at 7 and 8 TeV
6.4±1.8±0.2		[2] AALTONEN	12L	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$10.7^{+2.5}_{-2.1}\pm0.5$		[3] AAIJ	12AR	LHCB	Repl. by AAIJ 17G
< 120	90	[4] PENG	10	BELL	$e^+e^- \to \Upsilon(5S)$
< 12	90	[5] AALTONEN	09C	CDF	Repl. by AALTONEN 12L
< 17	90	[6] ABULENCIA,A	06D	CDF	Repl. by AALTONEN 09C
<2320	90	[7] ABE	00C	SLD	$e^+e^- \to Z$
<1700	90	[8] BUSKULIC	96V	ALEP	$e^+e^- \to Z$

NEW

[1] AAIJ 17G reports $[\Gamma(B^0_s \to \pi^+\pi^-)/\Gamma_{total}]$ / $[B(B^0 \to K^+\pi^-)] \times [\Gamma(\overline{b} \to B^0_s\,\mathrm{at}\,pp)/\Gamma(\overline{b} \to B^0\,\mathrm{at}\,pp)] = (9.15 \pm 0.71 \pm 0.83) \times 10^{-3}$ which we multiply or divide by our best (shown rounded) values $B(B^0 \to K^+\pi^-) = (2.00 \pm 0.04) \times 10^{-5}$, $\Gamma(\overline{b} \to B^0_s\,\mathrm{at}\,pp)/\Gamma(\overline{b} \to B^0\,\mathrm{at}\,pp) = 0.251 \pm 0.007$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=S086R15;LINKAGE=A

[2] AALTONEN 12L reports $[\Gamma(B^0_s \to \pi^+\pi^-)/\Gamma_{total}]$ / $[B(B^0 \to K^+\pi^-)] \times [\Gamma(\overline{b} \to B^0_s\,\mathrm{at}\,pp)/\Gamma(\overline{b} \to B^0\,\mathrm{at}\,pp)] = 0.008 \pm 0.002 \pm 0.001$ which we multiply or divide by our best (shown rounded) values $B(B^0 \to K^+\pi^-) = (2.00 \pm 0.04) \times 10^{-5}$, $\Gamma(\overline{b} \to B^0_s\,\mathrm{at}\,pp)/\Gamma(\overline{b} \to B^0\,\mathrm{at}\,pp) = 0.251 \pm 0.007$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=S086R15;LINKAGE=AL

[3] AAIJ 12AR reports $[\Gamma(B^0_s \to \pi^+\pi^-)/\Gamma_{total}]$ / $[B(B^0 \to \pi^+\pi^-)] \times [\Gamma(\overline{b} \to B^0_s\,\mathrm{at}\,pp)/\Gamma(\overline{b} \to B^0\,\mathrm{at}\,pp)] = 0.050^{+0.011}_{-0.009} \pm 0.004$ which we multiply or divide by our best (shown rounded) values $B(B^0 \to \pi^+\pi^-) = (5.37 \pm 0.20) \times 10^{-6}$, $\Gamma(\overline{b} \to B^0_s\,\mathrm{at}\,pp)/\Gamma(\overline{b} \to B^0\,\mathrm{at}\,pp) = 0.251 \pm 0.007$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=S086R15;LINKAGE=AI

[4] Uses $\Upsilon(10860) \to B^*_s\overline{B}^*_s$ and assumes $B(\Upsilon(10860) \to B^{(*)}_s\overline{B}^{(*)}_s) = (19.3 \pm 2.9)\%$ and $\Gamma(\Upsilon(10860) \to B^*_s\overline{B}^*_s)$ / $\Gamma(\Upsilon(10860) \to B^{(*)}_s\overline{B}^{(*)}_s) = (90.1^{+3.8}_{-4.0})\%$. NODE=S086R15;LINKAGE=PE

[5] Obtains this result from $(f_s/f_d) \cdot B(B_s \to \pi^+\pi^-)/B(B^0 \to K^+\pi^-) = 0.007 \pm 0.004 \pm 0.005$, assuming $f_s/f_d = 0.276 \pm 0.034$ and $B(B^0 \to K^+\pi^-) = (19.4 \pm 0.6) \times 10^{-6}$. NODE=S086R15;LINKAGE=AA

[6] ABULENCIA,A 06D obtains this from $B(B_s \to \pi^+\pi^-)$ / $B(B_s \to K^+K^-) < 0.05$ at 90% CL, assuming $B(B_s \to K^+K^-) = (33 \pm 6 \pm 7) \times 10^{-6}$. NODE=S086R15;LINKAGE=AB

[7] ABE 00C assumes $B(Z \to b\overline{b})=(21.7 \pm 0.1)\%$ and the B fractions $f_{B^0}=f_{B^+}=(39.7^{+1.8}_{-2.2})\%$ and $f_{B_s}=(10.5^{+1.8}_{-2.2})\%$. NODE=S086R15;LINKAGE=KQ

[8] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons. NODE=S086R15;LINKAGE=BV

$\Gamma(\pi^0\pi^0)/\Gamma_{total}$ Γ_{117}/Γ

NODE=S086R13
NODE=S086R13

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<7.7 × 10^{-6}	90	[1] BORAH	23	BELL	$e^+e^- \to \Upsilon(5S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.1 \times 10^{-4}$	90	[2] ACCIARRI	95H	L3	$e^+e^- \to Z$

[1] BORAH 23 assumes $f_{B_s} = 20.1 \pm 3.1\%$. NODE=S086R13;LINKAGE=B

[2] ACCIARRI 95H assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$. NODE=S086R13;LINKAGE=A

$\Gamma(\eta\pi^0)/\Gamma_{total}$ Γ_{118}/Γ

NODE=S086R12
NODE=S086R12

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.0 × 10^{-3}	90	[1] ACCIARRI	95H	L3	$e^+e^- \to Z$

[1] ACCIARRI 95H assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$. NODE=S086R12;LINKAGE=A

$\Gamma(\eta\eta)/\Gamma_{total}$ — Γ_{119}/Γ

NODE=S086R11
NODE=S086R11

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.43 × 10^−4	90	BHUYAN	22	BELL	$e^+e^- \to \Upsilon(5S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.5 × 10^−3	90	[1] ACCIARRI	95H	L3	$e^+e^- \to Z$

[1] ACCIARRI 95H assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$.

NODE=S086R11;LINKAGE=A

$\Gamma(\rho^0\rho^0)/\Gamma_{total}$ — Γ_{120}/Γ

NODE=S086R24
NODE=S086R24

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.20 × 10^−4	90	[1] ABE	00C	SLD	$e^+e^- \to Z$

[1] ABE 00C assumes B($Z \to b\overline{b}$)=(21.7 ± 0.1)% and the B fractions f_{B^0}=f_{B^+}= $(39.7^{+1.8}_{-2.2})$% and f_{B_s}=$(10.5^{+1.8}_{-2.2})$%.

NODE=S086R24;LINKAGE=KQ

$\Gamma(\eta' K^0_S)/\Gamma_{total}$ — Γ_{121}/Γ

NODE=S086P66
NODE=S086P66

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8.16 × 10^−6	90	[1] PANG	22	BELL	$e^+e^- \to \Upsilon(5S)$

[1] Uses $\Upsilon(10860) \to B_s^{(*)}\overline{B}_s^{(*)}$ decays and assumes B($\Upsilon(10860) \to B_s^{(*)}\overline{B}_s^{(*)}$) = (20.1 ± 3.1)%.

NODE=S086P66;LINKAGE=A

$\Gamma(\eta'\eta)/\Gamma_{total}$ — Γ_{122}/Γ

NODE=S086P53
NODE=S086P53

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.5 × 10^−5	90	[1] NISAR	21	BELL	$e^+e^- \to \Upsilon(5S)$

[1] Uses $\Upsilon(10860) \to B_s^*\overline{B}_s^*$ decays and assumes B($\Upsilon(10860) \to B_s^{(*)}\overline{B}_s^{(*)}$) = (20.1 ± 3.1)%.

NODE=S086P53;LINKAGE=A

$\Gamma(\eta'\eta')/\Gamma_{total}$ — Γ_{123}/Γ

NODE=S086S05
NODE=S086S05

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
3.3±0.7±0.1	[1] AAIJ	15O	LHCB	pp at 7, 8 TeV

[1] AAIJ 15O reports [$\Gamma(B^0_s \to \eta'\eta')/\Gamma_{total}$] / [B($B^+ \to \eta' K^+$)] = 0.47 ± 0.09 ± 0.04 which we multiply by our best (shown rounded) value B($B^+ \to \eta' K^+$) = (7.04 ± 0.25) × 10^{-5}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086S05;LINKAGE=A

$\Gamma(\eta'\phi)/\Gamma_{total}$ — Γ_{124}/Γ

NODE=S086P26
NODE=S086P26

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.82 × 10^−6	90	[1] AAIJ	17BA	LHCB	pp at 7, 8 TeV

[1] Corresponds to the 95% CL upper limit 1.01 × 10^{-6}. Uses the normalization mode $B^+ \to \eta' K^+$ with branching fraction (70.6 ± 2.5) × 10^{-6} and the ratio of hadronisation fractions f_s/f_d =0.259 ± 0.015, which is assumed equal to f_s/f_u.

NODE=S086P26;LINKAGE=A

$\Gamma(\eta' X_{s\overline{s}})/\Gamma_{total}$ — Γ_{67}/Γ

NODE=S086P56
NODE=S086P56

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<1.4	90	[1] DUBEY	21	BELL	$e^+e^- \to \Upsilon(4S)$

[1] DUBEY 21 result is for m($X_{s\overline{s}}$) < 2.85 GeV/c^2.

NODE=S086P56;LINKAGE=A

$\Gamma(\phi f_0(980),\ f_0(980) \to \pi^+\pi^-)/\Gamma_{total}$ — Γ_{125}/Γ

NODE=S086P23
NODE=S086P23

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
1.12±0.16±0.14	[1] AAIJ	17A	LHCB	pp at 7, 8 TeV

[1] Signal is observed with 8 standard deviations significance.

NODE=S086P23;LINKAGE=A

$\Gamma(\phi f_2(1270),\ f_2(1270) \to \pi^+\pi^-)/\Gamma_{total}$ — Γ_{126}/Γ

NODE=S086P24
NODE=S086P24

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
$0.61\pm0.13^{+0.13}_{-0.08}$	[1] AAIJ	17A	LHCB	pp at 7, 8 TeV

[1] Signal is observed with 5 standard deviations significance.

NODE=S086P24;LINKAGE=A

$\Gamma(\phi\rho^0)/\Gamma_{total}$ Γ_{127}/Γ

NODE=S086R27
NODE=S086R27

VALUE (units 10^{-7})	CL%	DOCUMENT ID		TECN	COMMENT
2.7±0.7±0.3		[1] AAIJ	17A	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<6170	90	[2] ABE	00C	SLD	$e^+e^- \rightarrow Z$

[1] Signal evidence is 4 standard deviations. NODE=S086R27;LINKAGE=A

[2] ABE 00C assumes B($Z \rightarrow b\overline{b}$)=(21.7 ± 0.1)% and the B fractions f_{B^0}=f_{B^+}= $(39.7^{+1.8}_{-2.2})$% and f_{B_s}=$(10.5^{+1.8}_{-2.2})$%. NODE=S086R27;LINKAGE=KQ

$\Gamma(\phi\pi^+\pi^-)/\Gamma_{total}$ Γ_{128}/Γ

NODE=S086P22
NODE=S086P22

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
3.48±0.23±0.39	[1] AAIJ	17A	LHCB	pp at 7, 8 TeV

[1] Inclusive decays in mass range 400 < m($\pi^+\pi^-$) < 1600 MeV/c^2. NODE=S086P22;LINKAGE=A

$\Gamma(\phi\phi)/\Gamma_{total}$ Γ_{129}/Γ

NODE=S086R29
NODE=S086R29

NEW

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
18.3±1.4 OUR FIT					
[(18.4 ± 1.4) × 10^{-6} OUR 2025 FIT]					
18.5±1.4±1.0		[1] AAIJ	15AS	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$14\ ^{+6}_{-5}\ \pm 6$		[2] ACOSTA	05J	CDF	Repl. by AALTONEN 11AN
<1183	90	[3] ABE	00C	SLD	$e^+e^- \rightarrow Z$

[1] AAIJ 15AS reports [$\Gamma(B^0_s \rightarrow \phi\phi)/\Gamma_{total}$] / [B($B^0 \rightarrow K^*(892)^0\phi$)] = 1.84 ± 0.05 ± 0.13 which we multiply by our best (shown rounded) value B($B^0 \rightarrow K^*(892)^0\phi$) = (1.00 ± 0.05) × 10^{-5}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R29;LINKAGE=A

[2] Uses B($B^0 \rightarrow J/\psi\phi$) = (1.38 ± 0.49) × 10^{-3} and production cross-section ratio of $\sigma(B_s)/\sigma(B^0)$ = 0.26 ± 0.04. NODE=S086R29;LINKAGE=AO

[3] ABE 00C assumes B($Z \rightarrow b\overline{b}$)=(21.7 ± 0.1)% and the B fractions f_{B^0}=f_{B^+}= $(39.7^{+1.8}_{-2.2})$% and f_{B_s}=$(10.5^{+1.8}_{-2.2})$%. NODE=S086R29;LINKAGE=KQ

$\Gamma(\phi\phi)/\Gamma(J/\psi(1S)\phi)$ Γ_{129}/Γ_{69}

NODE=S086S01
NODE=S086S01

NEW

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.81±0.15 OUR FIT				
[(1.79 ± 0.14) × 10^{-2} OUR 2025 FIT]				
1.78±0.14±0.20	AALTONEN	11AN	CDF	$p\overline{p}$ at 1.96 TeV

$\Gamma(\phi\phi\phi)/\Gamma(\phi\phi)$ $\Gamma_{130}/\Gamma_{129}$

NODE=S086P34
NODE=S086P34

VALUE	DOCUMENT ID		TECN	COMMENT
0.117±0.030±0.015	AAIJ	17BB	LHCB	pp at 7, 8 TeV

$\Gamma(\pi^+K^-)/\Gamma_{total}$ Γ_{131}/Γ

NODE=S086R7
NODE=S086R7

NEW

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
5.9±0.6 OUR AVERAGE					
[(5.9 ± 0.7) × 10^{-6} OUR 2025 AVERAGE]					
5.9±0.7±0.2		[1] AAIJ	12AR	LHCB	pp at 7 TeV
5.8±1.0±0.5		[2] AALTONEN	09C	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 26	90	[3] PENG	10	BELL	$e^+e^- \rightarrow \Upsilon(5S)$
< 5.6	90	[4] ABULENCIA,A	06D	CDF	Repl. by AALTONEN 09C
<261	90	[5] ABE	00C	SLD	$e^+e^- \rightarrow Z$
<210	90	[6] BUSKULIC	96V	ALEP	$e^+e^- \rightarrow Z$
<260	90	[7] AKERS	94L	OPAL	$e^+e^- \rightarrow Z$

[1] AAIJ 12AR reports [$\Gamma(B^0_s \rightarrow \pi^+K^-)/\Gamma_{total}$] / [B($B^0 \rightarrow K^+\pi^-$)] × [$\Gamma(\overline{b} \rightarrow B^0_s\,\text{at}\,pp)/\Gamma(\overline{b} \rightarrow B^0\,\text{at}\,pp)$] = 0.074 ± 0.006 ± 0.006 which we multiply or divide by our best (shown rounded) values B($B^0 \rightarrow K^+\pi^-$) = (2.00 ± 0.04) × 10^{-5}, $\Gamma(\overline{b} \rightarrow B^0_s\,\text{at}\,pp)/\Gamma(\overline{b} \rightarrow B^0\,\text{at}\,pp)$ = 0.251 ± 0.007. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=S086R7;LINKAGE=AI

[2] AALTONEN 09C reports [$\Gamma(B^0_s \rightarrow \pi^+K^-)/\Gamma_{total}$] / [B($B^0 \rightarrow K^+\pi^-$)] × [B($\overline{b} \rightarrow B^0_s\,\text{at}\,Z$)] / [B($\overline{b} \rightarrow B^0\,\text{at}\,Z$)] = 0.071 ± 0.010 ± 0.007 which we multiply or divide by our best (shown rounded) values B($B^0 \rightarrow K^+\pi^-$) = (2.00 ± 0.04) × 10^{-5}, B($\overline{b} \rightarrow$ NODE=S086R7;LINKAGE=AL

B^0_s at Z) = (10.0 ± 0.8) × 10^{-2}, B($\overline{b} \to B^0$ at Z) = (40.8 ± 0.7) × 10^{-2}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

[3] Uses $\Upsilon(10860) \to B^*_s \overline{B}^*_s$ and assumes B($\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s$) = (19.3 ± 2.9)% and Γ($\Upsilon(10860) \to B^*_s \overline{B}^*_s$) / Γ($\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s$) = $(90.1^{+3.8}_{-4.0})$%. NODE=S086R7;LINKAGE=PE

[4] ABULENCIA,A 06D obtains this from (f_s/f_d) (B($B_s \to \pi^+ K^-$) / B($B^0 \to K^+\pi^-$)) < 0.08 at 90% CL, assuming f_s/f_d = 0.260 ± 0.039 and B($B^0 \to K^+\pi^-$) = (18.9 ± 0.7) × 10^{-6}. NODE=S086R7;LINKAGE=AB

[5] ABE 00C assumes B($Z \to b\overline{b}$)=(21.7 ± 0.1)% and the B fractions f_{B^0}=f_{B^+}= $(39.7^{+1.8}_{-2.2})$% and f_{B_s}=$(10.5^{+1.8}_{-2.2})$%. NODE=S086R7;LINKAGE=KQ

[6] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons. NODE=S086R7;LINKAGE=BV

[7] Assumes B($Z \to b\overline{b}$) = 0.217 and B^0_d (B^0_s) fraction 39.5% (12%). NODE=S086R7;LINKAGE=A

$\Gamma(K^+K^-)/\Gamma_{total}$ — Γ_{132}/Γ

NODE=S086R8
NODE=S086R8

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
26.1± 1.6 OUR AVERAGE					
[(27.2 ± 2.3) × 10^{-6} OUR 2025 AVERAGE]					
25.2± 1.7±0.8		[1] AAIJ	12AR	LHCB	pp at 7 TeV
28.3± 2.4±2.7		[2] AALTONEN	11N	CDF	$p\overline{p}$ at 1.96 TeV
38 $^{+10}_{-9}$ ±7		[3] PENG	10	BELL	$e^+e^- \to \Upsilon(5S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<310	90	DRUTSKOY	07A	BELL	$e^+e^- \to \Upsilon(5S)$
33 ± 6 ±7		[4] ABULENCIA,A	06D	CDF	Repl. by AALTONEN 11N
<283	90	[5] ABE	00C	SLD	$e^+e^- \to Z$
< 59	90	[6] BUSKULIC	96V	ALEP	$e^+e^- \to Z$
<140	90	[7] AKERS	94L	OPAL	$e^+e^- \to Z$

NEW

[1] AAIJ 12AR reports [Γ($B^0_s \to K^+K^-$)/Γ$_{total}$] / [B($B^0 \to K^+\pi^-$)] × [Γ($\overline{b} \to B^0_s$ at pp)/Γ($\overline{b} \to B^0$ at pp)] = 0.316 ± 0.009 ± 0.019 which we multiply or divide by our best (shown rounded) values B($B^0 \to K^+\pi^-$) = (2.00 ± 0.04) × 10^{-5}, Γ($\overline{b} \to B^0_s$ at pp)/Γ($\overline{b} \to B^0$ at pp) = 0.251 ± 0.007. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=S086R8;LINKAGE=AI

[2] AALTONEN 11N reports (f_s/f_d) (B($B^0_s \to K^+K^-$) / B($B^0 \to K^+\pi^-$)) = 0.347 ± 0.020 ± 0.021. We multiply this result by our best value of B($B^0 \to K^+\pi^-$) = (2.00 ± 0.04) × 10^{-5} and divide by our best value of f_s/f_d, where 1/2 f_s/f_d = 0.1230 ± 0.0115. Our first quoted uncertainty is the combined experiment's uncertainty and our second is the systematic uncertainty from using out best values. NODE=S086R8;LINKAGE=AA

[3] Uses $\Upsilon(10860) \to B^*_s \overline{B}^*_s$ and assumes B($\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s$) = (19.3 ± 2.9)% and Γ($\Upsilon(10860) \to B^*_s \overline{B}^*_s$) / Γ($\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s$) = $(90.1^{+3.8}_{-4.0})$%. NODE=S086R8;LINKAGE=PE

[4] ABULENCIA,A 06D obtains this from (f_s/f_d) (B($B_s \to K^+K^-$) / B($B^0 \to K^+\pi^-$)) = 0.46 ± 0.08 ± 0.07, assuming f_s/f_d = 0.260 ± 0.039 and B($B^0 \to K^+\pi^-$) = (18.9 ± 0.7) × 10^{-6}. NODE=S086R8;LINKAGE=AB

[5] ABE 00C assumes B($Z \to b\overline{b}$)=(21.7 ± 0.1)% and the B fractions f_{B^0}=f_{B^+}= $(39.7^{+1.8}_{-2.2})$% and f_{B_s}=$(10.5^{+1.8}_{-2.2})$%. NODE=S086R8;LINKAGE=KQ

[6] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons. NODE=S086R8;LINKAGE=BV

[7] Assumes B($Z \to b\overline{b}$) = 0.217 and B^0_d (B^0_s) fraction 39.5% (12%). NODE=S086R8;LINKAGE=A

$\Gamma(K^0\overline{K}^0)/\Gamma_{total}$ — Γ_{133}/Γ

NODE=S086R39
NODE=S086R39

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
1.76±0.31 OUR AVERAGE					
1.68±0.34$^{+0.16}_{-0.15}$		[1] AAIJ	20F	LHCB	pp at 7, 8, 13 TeV
1.96$^{+0.58}_{-0.51}$±0.10±0.20		[2] PAL	16	BELL	$e^+e^- \to \Upsilon(5S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<6.6	90	[3] PENG	10	BELL	Repl. by PAL 16

[1] AAIJ 20F reports [Γ($B^0_s \to K^0\overline{K}^0$)/Γ$_{total}$] / [B($B^0 \to K^0\phi$)] = 2.3 ± 0.4 ± 0.2 ± 0.1 which we multiply by our best (shown rounded) value B($B^0 \to K^0\phi$) = (7.3 ± 0.7) × 10^{-6}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R39;LINKAGE=B

[2] Observed in $B^0_s \to K^0_S K^0_S$ with significance of 5.1 σ. The last uncertainty is due to the uncertainty of the total number of $B^0_s \overline{B}^0_s$ pairs. NODE=S086R39;LINKAGE=A

[3] Uses $\Upsilon(10860) \to B^*_s \overline{B}^*_s$ and assumes B($\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s$) = (19.3 ± 2.9)% and Γ($\Upsilon(10860) \to B^*_s \overline{B}^*_s$) / Γ($\Upsilon(10860) \to B^{(*)}_s \overline{B}^{(*)}_s$) = $(90.1^{+3.8}_{-4.0})$%. NODE=S086R39;LINKAGE=PE

$\Gamma(K^0\pi^+\pi^-)/\Gamma_{total}$ Γ_{134}/Γ

NODE=S086R61
NODE=S086R61

VALUE (units 10^{-6})	DOCUMENT ID	TECN	COMMENT
9.5±2.1±0.3	[1,2] AAIJ 17BP	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
14 ±4 ±1	[3] AAIJ 13BP	LHCB	Repl. by AAIJ 17BP

[1] AAIJ 17BP reports $[\Gamma(B_s^0 \to K^0\pi^+\pi^-)/\Gamma_{total}] / [B(B^0 \to K^0\pi^+\pi^-)] = 0.191 \pm 0.027 \pm 0.033$ which we multiply by our best (shown rounded) value $B(B^0 \to K^0\pi^+\pi^-) = (4.97 \pm 0.18) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R61;LINKAGE=C

[2] Used $f_s/f_d = 0.259 \pm 0.015$. NODE=S086R61;LINKAGE=D

[3] AAIJ 13BP reports $[\Gamma(B_s^0 \to K^0\pi^+\pi^-)/\Gamma_{total}] / [B(B^0 \to K^0\pi^+\pi^-)] = 0.29 \pm 0.06 \pm 0.04$ which we multiply by our best (shown rounded) value $B(B^0 \to K^0\pi^+\pi^-) = (4.97 \pm 0.18) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R61;LINKAGE=AA

$\Gamma(K^0K^\pm\pi^\mp)/\Gamma_{total}$ Γ_{135}/Γ

NODE=S086R62
NODE=S086R62

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
8.4±0.8±0.3	[1,2] AAIJ 17BP	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
7.4±0.9±0.3	[3] AAIJ 13BP	LHCB	Repl. by AAIJ 17BP

[1] AAIJ 17BP reports $[\Gamma(B_s^0 \to K^0K^\pm\pi^\mp)/\Gamma_{total}] / [B(B^0 \to K^0\pi^+\pi^-)] = 1.70 \pm 0.07 \pm 0.15$ which we multiply by our best (shown rounded) value $B(B^0 \to K^0\pi^+\pi^-) = (4.97 \pm 0.18) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R62;LINKAGE=C

[2] Used $f_s/f_d = 0.259 \pm 0.015$. NODE=S086R62;LINKAGE=D

[3] AAIJ 13BP reports $[\Gamma(B_s^0 \to K^0K^\pm\pi^\mp)/\Gamma_{total}] / [B(B^0 \to K^0\pi^+\pi^-)] = 1.48 \pm 0.12 \pm 0.14$ which we multiply by our best (shown rounded) value $B(B^0 \to K^0\pi^+\pi^-) = (4.97 \pm 0.18) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R62;LINKAGE=AA

$\Gamma(K^*(892)^-\pi^+)/\Gamma_{total}$ Γ_{136}/Γ

NODE=S086R96
NODE=S086R96

VALUE (units 10^{-6})	DOCUMENT ID	TECN	COMMENT
2.9±1.0±0.2	[1,2] AAIJ 14BM	LHCB	pp at 7 TeV

[1] AAIJ 14BM reports $[\Gamma(B_s^0 \to K^*(892)^-\pi^+)/\Gamma_{total}] / [B(B^0 \to K^*(892)^+\pi^-)] = 0.39 \pm 0.13 \pm 0.05$ which we multiply by our best (shown rounded) value $B(B^0 \to K^*(892)^+\pi^-) = (7.5 \pm 0.4) \times 10^{-6}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R96;LINKAGE=A

[2] Uses $f_s/f_d = 0.259 \pm 0.015$. NODE=S086R96;LINKAGE=B

$\Gamma(K^*(892)^\pm K^\mp)/\Gamma_{total}$ Γ_{137}/Γ

NODE=S086R97
NODE=S086R97

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
1.86±0.12±0.45	[1,2] AAIJ 19K	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$1.12 \pm 0.21^{+0.07}_{-0.06}$	[3,4] AAIJ 14BM	LHCB	Repl. by AAIJ 19K

[1] AAIJ 19K reports $(18.6 \pm 1.2 \pm 0.8 \pm 4.0 \pm 2.0) \times 10^{-6}$ as the measured value. We have combined in quadrature all systematic uncertainties into a single one. NODE=S086R97;LINKAGE=C

[2] Measured in Dalitz plot analysis of $B_s^0 \to K_S^0 K^\pm\pi^\mp$ decays. NODE=S086R97;LINKAGE=D

[3] AAIJ 14BM reports $[\Gamma(B_s^0 \to K^*(892)^\pm K^\mp)/\Gamma_{total}] / [B(B^0 \to K^*(892)^+\pi^-)] = 1.49 \pm 0.22 \pm 0.18$ which we multiply by our best (shown rounded) value $B(B^0 \to K^*(892)^+\pi^-) = (7.5 \pm 0.4) \times 10^{-6}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R97;LINKAGE=A

[4] Uses $f_s/f_d = 0.259 \pm 0.015$. NODE=S086R97;LINKAGE=B

$\Gamma(K_0^*(1430)^\pm K^\mp)/\Gamma_{total}$ Γ_{138}/Γ

NODE=S086P43
NODE=S086P43

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
3.13±0.23±2.53	[1,2] AAIJ 19K	LHCB	pp at 7, 8 TeV

[1] AAIJ 19K reports $(31.3 \pm 2.3 \pm 0.7 \pm 25.1 \pm 3.3) \times 10^{-6}$ as the measured value. We have combined in quadrature all systematic uncertainties into a single one. NODE=S086P43;LINKAGE=A

[2] Measured in Dalitz plot analysis of $B_s^0 \to K_S^0 K^\pm\pi^\mp$ decays. NODE=S086P43;LINKAGE=B

$\Gamma\big(K_2^*(1430)^{\pm} K^{\mp}\big)/\Gamma_{\rm total}$ Γ_{139}/Γ

NODE=S086P44
NODE=S086P44

VALUE (units 10^{-5})		DOCUMENT ID		TECN	COMMENT
1.03±0.25±1.64	[1,2]	AAIJ	19K	LHCB	pp at 7, 8 TeV

[1] AAIJ 19K reports $(10.3 \pm 2.5 \pm 1.1 \pm 16.3 \pm 1.1) \times 10^{-6}$ as the measured value. We have combined in quadrature all systematic uncertainties into a single one. NODE=S086P44;LINKAGE=A

[2] Measured in Dalitz plot analysis of $B_s^0 \to K_S^0 K^{\pm} \pi^{\mp}$ decays. NODE=S086P44;LINKAGE=B

$\Gamma\big(K^*(892)^0 \overline{K}^0 + {\rm c.c.}\big)/\Gamma_{\rm total}$ Γ_{140}/Γ

NODE=S086P45
NODE=S086P45

VALUE (units 10^{-5})		DOCUMENT ID		TECN	COMMENT
1.98±0.28±0.50	[1,2]	AAIJ	19K	LHCB	pp at 7, 8 TeV

[1] AAIJ 19K reports $(19.8 \pm 2.8 \pm 1.2 \pm 4.4 \pm 2.1) \times 10^{-6}$ as the measured value. We have combined in quadrature all systematic uncertainties into a single one. NODE=S086P45;LINKAGE=A

[2] Measured in Dalitz plot analysis of $B_s^0 \to K_S^0 K^{\pm} \pi^{\mp}$ decays. NODE=S086P45;LINKAGE=B

$\Gamma\big(K_0^*(1430) \overline{K}^0 + {\rm c.c.}\big)/\Gamma_{\rm total}$ Γ_{141}/Γ

NODE=S086P46
NODE=S086P46

VALUE (units 10^{-5})		DOCUMENT ID		TECN	COMMENT
3.30±0.25±0.98	[1,2]	AAIJ	19K	LHCB	pp at 7, 8 TeV

[1] AAIJ 19K reports $(33.0 \pm 2.5 \pm 0.9 \pm 9.1 \pm 3.5) \times 10^{-6}$ as the measured value. We have combined in quadrature all systematic uncertainties into a single one. NODE=S086P46;LINKAGE=A

[2] Measured in Dalitz plot analysis of $B_s^0 \to K_S^0 K^{\pm} \pi^{\mp}$ decays. NODE=S086P46;LINKAGE=B

$\Gamma\big(K_2^*(1430)^0 \overline{K}^0 + {\rm c.c.}\big)/\Gamma_{\rm total}$ Γ_{142}/Γ

NODE=S086P47
NODE=S086P47

VALUE (units 10^{-5})		DOCUMENT ID		TECN	COMMENT
1.68±0.45±2.13	[1,2]	AAIJ	19K	LHCB	pp at 7, 8 TeV

[1] AAIJ 19K reports $(16.8 \pm 4.5 \pm 1.7 \pm 21.2 \pm 1.8) \times 10^{-6}$ as the measured value. We have combined in quadrature all systematic uncertainties into a single one. NODE=S086P47;LINKAGE=A

[2] Measured in Dalitz plot analysis of $B_s^0 \to K_S^0 K^{\pm} \pi^{\mp}$ decays. NODE=S086P47;LINKAGE=B

$\Gamma\big(K_S^0 \overline{K}^*(892)^0 + {\rm c.c.}\big)/\Gamma_{\rm total}$ Γ_{143}/Γ

NODE=S086P15
NODE=S086P15

VALUE (units 10^{-6})		DOCUMENT ID		TECN	COMMENT
16.4±3.4±2.3	[1]	AAIJ	16	LHCB	pp at 7 TeV

OCCUR=2

[1] Measured relative to $B^0 \to K_S^0 \pi^+ \pi^-$ using the value of B$(B^0 \to K^0 \pi^+ \pi^-) = (4.96 \pm 0.2) \times 10^{-5}$. NODE=S086P15;LINKAGE=B

$\Gamma\big(K^0 K^+ K^-\big)/\Gamma_{\rm total}$ Γ_{144}/Γ

NODE=S086R63
NODE=S086R63

VALUE (units 10^{-7})	CL%		DOCUMENT ID		TECN	COMMENT
12.9±6.5±0.5		[1,2,3]	AAIJ	17BP	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<34	90	[4]	AAIJ	13BP	LHCB	Repl. by AAIJ 17BP

[1] AAIJ 17BP reports $[\Gamma\big(B_s^0 \to K^0 K^+ K^-\big)/\Gamma_{\rm total}] / [{\rm B}(B^0 \to K^0 \pi^+ \pi^-)] = 0.026 \pm 0.011 \pm 0.007$ which we multiply by our best (shown rounded) value B$(B^0 \to K^0 \pi^+ \pi^-) = (4.97 \pm 0.18) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R63;LINKAGE=C

[2] AAIJ 17BP also set the limit range 4–25 $\times 10^{-7}$ at 90% CL using the world average value B$(B^0 \to K^0 \pi^+ \pi^-) = (4.96 \pm 0.20) \times 10^{-5}$. NODE=S086R63;LINKAGE=D

[3] Used $f_s/f_d = 0.259 \pm 0.015$. NODE=S086R63;LINKAGE=E

[4] AAIJ 13BP reports $[\Gamma\big(B_s^0 \to K^0 K^+ K^-\big)/\Gamma_{\rm total}] / [{\rm B}(B^0 \to K^0 \pi^+ \pi^-)] < 0.068$ which we multiply by our best (shown rounded) value B$(B^0 \to K^0 \pi^+ \pi^-) = 4.97 \times 10^{-5}$. NODE=S086R63;LINKAGE=AA

$\Gamma\big(\overline{K}^*(892)^0 \rho^0\big)/\Gamma_{\rm total}$ Γ_{145}/Γ

NODE=S086R25
NODE=S086R25

VALUE	CL%		DOCUMENT ID		TECN	COMMENT
$<7.67 \times 10^{-4}$	90	[1]	ABE	00C	SLD	$e^+ e^- \to Z$

[1] ABE 00C assumes B$(Z \to b\overline{b})$=(21.7 ± 0.1)% and the B fractions $f_{B^0}=f_{B^+}=(39.7^{+1.8}_{-2.2})$% and $f_{B_s}=(10.5^{+1.8}_{-2.2})$%. NODE=S086R25;LINKAGE=KQ

$\Gamma\big(\overline{K}^*(892)^0 K^*(892)^0\big)/\Gamma_{\rm total}$ Γ_{146}/Γ

NODE=S086R26
NODE=S086R26

VALUE (units 10^{-5})	CL%		DOCUMENT ID		TECN	COMMENT
1.11±0.26±0.06		[1]	AAIJ	15AF	LHCB	pp at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
2.81±0.46±0.56		[2]	AAIJ	12F	LHCB	Repl. by AAIJ 15AF
<168.1	90	[3]	ABE	00C	SLD	$e^+ e^- \to Z$

[1] AAIJ 15AF reports $[\Gamma(B_s^0 \to \overline{K}^*(892)^0 K^*(892)^0)/\Gamma_{total}]$ / $[B(B^0 \to K^*(892)^0 \phi)]$ = 1.11 ± 0.22 ± 0.12 ± 0.06 which we multiply by our best (shown rounded) value $B(B^0 \to K^*(892)^0 \phi) = (1.00 \pm 0.05) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R26;LINKAGE=A

[2] Uses $B^0 \to J/\psi K^{*0}$ for normalization and assumes $B(B^0 \to J/\psi K^{*0})$ $B(J/\psi \to \mu^+\mu^-)$ $B(K^{*0} \to K^+\pi^-) = (1.33 \pm 0.06) \times 10^{-3}$ and $f_s/f_d = 0.253 \pm 0.031$. The second quoted error is total uncertainty including the error of 0.34 on f_s/f_d. NODE=S086R26;LINKAGE=AA

[3] ABE 00C assumes $B(Z \to b\overline{b})$=(21.7 ± 0.1)% and the B fractions $f_{B^0}=f_{B^+}=(39.7^{+1.8}_{-2.2})$% and $f_{B_s}=(10.5^{+1.8}_{-2.2})$%. NODE=S086R26;LINKAGE=KQ

$\Gamma(\phi K^*(892)^0)/\Gamma_{total}$ — Γ_{150}/Γ

NODE=S086R28
NODE=S086R28

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
1.14±0.29±0.06		[1] AAIJ	13BW	LHCB	pp at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1013	90	[2] ABE	00C	SLD	$e^+e^- \to Z$

[1] AAIJ 13BW reports $[\Gamma(B_s^0 \to \phi K^*(892)^0)/\Gamma_{total}]$ / $[B(B^0 \to K^*(892)^0 \phi)]$ = 0.113 ± 0.024 ± 0.016 which we multiply by our best (shown rounded) value $B(B^0 \to K^*(892)^0 \phi) = (1.00 \pm 0.05) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086R28;LINKAGE=AA

[2] ABE 00C assumes $B(Z \to b\overline{b})$=(21.7 ± 0.1)% and the B fractions $f_{B^0}=f_{B^+}=(39.7^{+1.8}_{-2.2})$% and $f_{B_s}=(10.5^{+1.8}_{-2.2})$%. NODE=S086R28;LINKAGE=KQ

$\Gamma(p\overline{p})/\Gamma_{total}$ — Γ_{151}/Γ

NODE=S086R16

Test for ΔB=1 weak neutral current. Allowed by higher-order electroweak interactions.

NODE=S086R16
NODE=S086R16

VALUE (units 10^{-8})	CL%	DOCUMENT ID		TECN	COMMENT
< 0.44	90	[1] AAIJ	23T	LHCB	pp at 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 1.5	90	[2] AAIJ	17BJ	LHCB	Repl. by AAIJ 23T
$2.84^{+2.03}_{-1.68}{}^{+0.85}_{-0.18}$		[3] AAIJ	13BQ	LHCB	Repl. by AAIJ 17BJ
<5900	90	[4] BUSKULIC	96V	ALEP	$e^+e^- \to Z$

[1] Uses normalization mode $B(B^0 \to K^+\pi^-) = (19.6 \pm 0.5) \times 10^{-6}$ and B production ratio $f(\overline{b} \to B_s^0)/f(\overline{b} \to B_d^0) = 0.2539 \pm 0.0079$. NODE=S086R16;LINKAGE=B

[2] Uses normalization mode $B(B^0 \to K^+\pi^-) = (19.6 \pm 0.5) \times 10^{-6}$ and B production ratio $f(\overline{b} \to B_s^0)/f(\overline{b} \to B_d^0) = 0.259 \pm 0.015$. NODE=S086R16;LINKAGE=A

[3] Uses normalization mode $B(B^0 \to K^+\pi^-) = (19.55 \pm 0.54) \times 10^{-6}$ and B production ratio $f(\overline{b} \to B_s^0)/f(\overline{b} \to B_d^0) = 0.256 \pm 0.020$. NODE=S086R16;LINKAGE=AA

[4] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons. NODE=S086R16;LINKAGE=BV

$\Gamma(p\overline{p}K^0)/\Gamma_{total}$ — Γ_{152}/Γ

NODE=S086P90
NODE=S086P90

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
9.14±1.69±0.98	[1] AAIJ	25X	LHCB	pp at 7, 8 and 13 TeV

[1] The last error includes the systematic uncertainties due to the uncertainties of the branching fraction of the normalisation channel, and f_s/f_d. NODE=S086P90;LINKAGE=A

$\Gamma(p\overline{p}K^+K^-)/\Gamma_{total}$ — Γ_{153}/Γ

NODE=S086P30
NODE=S086P30

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
4.5±0.4±0.2	[1,2] AAIJ	17BD	LHCB	pp at 7, 8 TeV

[1] AAIJ 17BD reports $[\Gamma(B_s^0 \to p\overline{p}K^+K^-)/\Gamma_{total}]$ / $[B(B^0 \to J/\psi(1S)K^*(892)^0)]$ / $[B(J/\psi(1S) \to p\overline{p})]$ / $[B(K^*(892) \to (K\pi)^\pm)]$ = 1.67 ± 0.12 ± 0.11 which we multiply by our best (shown rounded) values $B(B^0 \to J/\psi(1S)K^*(892)^0) = (1.27 \pm 0.05) \times 10^{-3}$, $B(J/\psi(1S) \to p\overline{p}) = (2.121 \pm 0.029) \times 10^{-3}$, $B(K^*(892) \to (K\pi)^\pm) = (99.896 \pm 0.010) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. Reported value assumes $f_s/f_d = 0.259 \pm 0.015$. NODE=S086P30;LINKAGE=B

[2] The branching ratio is given for $m_{p\overline{p}}$ <2.85 GeV. NODE=S086P30;LINKAGE=C

$\Gamma(p\overline{p}K^+\pi^-)/\Gamma_{\text{total}}$ Γ_{154}/Γ

NODE=S086P31
NODE=S086P31

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
13.9±2.5±0.5	[1,2] AAIJ	17BD	LHCB	pp at 7, 8 TeV

OCCUR=4

[1] AAIJ 17BD reports $[\Gamma(B^0_s \to p\overline{p}K^+\pi^-)/\Gamma_{\text{total}}]$ / $[B(B^0 \to J/\psi(1S)K^*(892)^0)]$ / $[B(J/\psi(1S) \to p\overline{p})]$ / $[B(K^*(892) \to (K\pi)^\pm)]$ = 0.52 ± 0.08 ± 0.05 which we multiply by our best (shown rounded) values $B(B^0 \to J/\psi(1S)K^*(892)^0) = (1.27 \pm 0.05) \times 10^{-3}$, $B(J/\psi(1S) \to p\overline{p}) = (2.121 \pm 0.029) \times 10^{-3}$, $B(K^*(892) \to (K\pi)^\pm) = (99.896 \pm 0.010) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. Reported value assumes $f_s/f_d = 0.259 \pm 0.015$.

NODE=S086P31;LINKAGE=J

[2] The branching ratio is given for $m_{p\overline{p}} <$2.85 GeV.

NODE=S086P31;LINKAGE=K

$\Gamma(p\overline{p}K^+\pi^-)/\Gamma(p\overline{p}K^+K^-)$ $\Gamma_{154}/\Gamma_{153}$

NODE=S086P33
NODE=S086P33

VALUE	DOCUMENT ID		TECN	COMMENT
0.31±0.05±0.02	[1,2] AAIJ	17BD	LHCB	pp at 7, 8 TeV

[1] Reports $B(B^0_s \to p\overline{p}K^+\pi^-)$ / $B(B^0 \to p\overline{p}K^+\pi^-) = 0.22 \pm 0.04 \pm 0.02 \pm 0.01$, where the third error is due to f_s/f_d.

NODE=S086P33;LINKAGE=A

[2] The ratio is given for $m_{p\overline{p}} <$2.85 GeV and assuming $f_s/f_d = 0.259 \pm 0.015$.

NODE=S086P33;LINKAGE=B

$\Gamma(p\overline{p}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{155}/Γ

NODE=S086P32
NODE=S086P32

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
4.3±2.0±0.2	[1,2] AAIJ	17BD	LHCB	pp at 7, 8 TeV

[1] AAIJ 17BD reports $[\Gamma(B^0_s \to p\overline{p}\pi^+\pi^-)/\Gamma_{\text{total}}]$ / $[B(B^0 \to J/\psi(1S)K^*(892)^0)]$ / $[B(J/\psi(1S) \to p\overline{p})]$ / $[B(K^*(892) \to (K\pi)^\pm)]$ = 0.16 ± 0.07 ± 0.02 which we multiply by our best (shown rounded) values $B(B^0 \to J/\psi(1S)K^*(892)^0) = (1.27 \pm 0.05) \times 10^{-3}$, $B(J/\psi(1S) \to p\overline{p}) = (2.121 \pm 0.029) \times 10^{-3}$, $B(K^*(892) \to (K\pi)^\pm) = (99.896 \pm 0.010) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. Reported value assumes $f_s/f_d = 0.259 \pm 0.015$.

NODE=S086P32;LINKAGE=C

[2] The branching ratio is given for $m_{p\overline{p}} <$2.85 GeV.

NODE=S086P32;LINKAGE=D

$\Gamma(p\overline{p}p\overline{p})/\Gamma_{\text{total}}$ Γ_{156}/Γ

NODE=S086P75
NODE=S086P75

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
2.3±1.0±0.1	[1] AAIJ	23AD	LHCB	pp at 7, 8, 13 TeV

[1] AAIJ 23AD reports $(2.3 \pm 1.0 \pm 0.2 \pm 0.1) \times 10^{-8}$ from a measurement of $[\Gamma(B^0_s \to p\overline{p}p\overline{p})/\Gamma_{\text{total}}]$ / $[B(B^0_s \to J/\psi(1S)\phi)]$ / $[B(\phi(1020) \to K^+K^-)]$ / $[B(J/\psi(1S) \to p\overline{p})]$ assuming $B(B^0_s \to J/\psi(1S)\phi) = (1.04 \pm 0.04) \times 10^{-3}$,$B(\phi(1020) \to K^+K^-) = 0.491 \pm 0.005$,$B(J/\psi(1S) \to p\overline{p}) = (2.120 \pm 0.029) \times 10^{-3}$, which we rescale to our best (shown rounded) values $B(B^0_s \to J/\psi(1S)\phi) = (1.01 \pm 0.04) \times 10^{-3}$, $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$, $B(J/\psi(1S) \to p\overline{p}) = (2.121 \pm 0.029) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=S086P75;LINKAGE=B

$\Gamma(p\overline{\Lambda}K^- + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{157}/Γ

NODE=S086P25
NODE=S086P25

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
5.5±0.9±0.4	[1,2] AAIJ	17AL	LHCB	pp at 7, 8 TeV

[1] AAIJ 17AL reports $(5.46 \pm 0.61 \pm 0.82) \times 10^{-6}$ from a measurement of $[\Gamma(B^0_s \to p\overline{\Lambda}K^- + \text{c.c.})/\Gamma_{\text{total}}]$ / $[B(B^0 \to p\overline{\Lambda}\pi^-)]$ assuming $B(B^0 \to p\overline{\Lambda}\pi^-) = (3.14 \pm 0.29) \times 10^{-6}$, which we rescale to our best (shown rounded) value $B(B^0 \to p\overline{\Lambda}\pi^-) = (3.16 \pm 0.24) \times 10^{-6}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P25;LINKAGE=C

[2] AAIJ 17AL value represents the sum of $B^0_s \to p\overline{\Lambda}K^-$ and $B^0_s \to \overline{p}\Lambda K^+$ and assumes the fraction $f_s/f_d = 0.259 \pm 0.015$.

NODE=S086P25;LINKAGE=D

$\Gamma(\Lambda_c^-\Lambda\pi^+)/\Gamma_{\text{total}}$ Γ_{158}/Γ

NODE=S086R69
NODE=S086R69

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
3.6±1.1±1.2	[1] SOLOVIEVA	13	BELL	$e^+e^- \to \Upsilon(4S)$

[1] The second error is the total systematic uncertainty including the Λ_c absolute branching fractions and the normalizion number of B_s events.

NODE=S086R69;LINKAGE=SO

$\Gamma(\Lambda_c^- \Lambda_c^+)/\Gamma_{total}$ Γ_{159}/Γ

NODE=S086R77

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<8.0 × 10^{-5}	95	[1] AAIJ 14AA	LHCB	pp at 7 TeV

[1] Uses B($\overline{B}^0 \to D^+ D_s^-$) = (7.2 ± 0.8) × 10^{-3}.

NODE=S086R77;LINKAGE=A

$\Gamma(\gamma\gamma)/\Gamma_{total}$ Γ_{160}/Γ

NODE=S086R10

Test for ΔB=1 weak neutral current.

VALUE (units 10^{-6})	CL%	DOCUMENT ID	TECN	COMMENT
< 3.1	90	[1] DUTTA 15	BELL	$e^+e^- \to \Upsilon(5S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
< 8.7	90	[2] WICHT 08A	BELL	Repl. by DUTTA 15
< 53	90	DRUTSKOY 07A	BELL	Repl. by WICHT 08A
<148	90	[3] ACCIARRI 95I	L3	$e^+e^- \to Z$

[1] Assumes the fraction of $B_s^{(*)}\overline{B}_s^{(*)}$ in $b\overline{b}$ events is f_s = (17.2 ± 3.0)%.

NODE=S086R10;LINKAGE=B

[2] Assumes $\Upsilon(5S) \to B_s^*\overline{B}_s^*$ = $(19.5^{+3.0}_{-2.3})$%.

NODE=S086R10;LINKAGE=WI

[3] ACCIARRI 95I assumes f_{B^0} = 39.5 ± 4.0 and f_{B_s} = (12.0 ± 3.0)%.

NODE=S086R10;LINKAGE=A

$\Gamma(\phi\gamma)/\Gamma_{total}$ Γ_{161}/Γ

NODE=S086R17

VALUE (units 10^{-6})	CL%	DOCUMENT ID	TECN	COMMENT
34 ± 4 OUR AVERAGE				
36 ± 5 ± 7		[1] DUTTA 15	BELL	$e^+e^- \to \Upsilon(5S)$
34.1± 3.4± 1.9		[2] AAIJ 13	LHCB	pp at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
39 ± 5		[3] AAIJ 12AE	LHCB	Repl. by AAIJ 13
$57 ^{+18}_{-15} {}^{+12}_{-11}$		[4] WICHT 08A	BELL	Repl. by DUTTA 15
<390	90	DRUTSKOY 07A	BELL	$e^+e^- \to \Upsilon(5S)$
<120	90	ACOSTA 02G	CDF	$p\overline{p}$ at 1.8 TeV
<700	90	[5] ADAM 96D	DLPH	$e^+e^- \to Z$

[1] Assumes the fraction of $B_s^{(*)}\overline{B}_s^{(*)}$ in $b\overline{b}$ events is f_s = (17.2 ± 3.0)%. The systematic uncertainty from f_s is 0.6 × 10^{-5}.

NODE=S086R17;LINKAGE=A

[2] AAIJ 13 reports [$\Gamma(B_s^0 \to \phi\gamma)/\Gamma_{total}$] / [B($B^0 \to K^*(892)^0\gamma$)] = 0.81 ± 0.04 ± 0.07 which we multiply by our best (shown rounded) value B($B^0 \to K^*(892)^0\gamma$) = (4.21 ± 0.24) × 10^{-5}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086R17;LINKAGE=AJ

[3] Measures B($B^0 \to K^{*0}\gamma$)/B($B_s \to \phi\gamma$) = $1.12 \pm 0.08(\text{stat})^{+0.06}_{-0.04}(\text{sys})^{+0.09}_{-0.08}(f_s/f_d)$ and uses current world-average value of B($B^0 \to K^{*0}\gamma$) = (4.33 ± 0.15) × 10^{-5}.

NODE=S086R17;LINKAGE=AI

[4] Assumes $\Upsilon(5S) \to B_s^*\overline{B}_s^*$ = $(19.5^{+3.0}_{-2.3})$%.

NODE=S086R17;LINKAGE=WI

[5] ADAM 96D assumes f_{B^0} = f_{B^-} = 0.39 and f_{B_s} = 0.12.

NODE=S086R17;LINKAGE=DQ

$\Gamma(f_2(1270)\gamma)/\Gamma(\phi\gamma)$ $\Gamma_{162}/\Gamma_{161}$

NODE=S086P84

VALUE (%)	DOCUMENT ID	TECN	COMMENT
$\mathbf{26^{+11}_{-13}{}^{+2}_{-3}}$	[1] AAIJ 24S	LHCB	pp at 7, 8, 13 TeV

[1] AAIJ 24S reports [$\Gamma(B_s^0 \to f_2(1270)\gamma)/\Gamma(B_s^0 \to \phi\gamma)$] × B($f_2(1270) \to K^+K^-$) / B($\phi(1020) \to K^+K^-$) = $1.2^{+0.4}_{-0.3}{}^{+0.3}_{-0.5}$% which we divide and multiply by our best values B($f_2(1270) \to K^+K^-$) = $\frac{1}{2}$ (4.6 ± 0.4) × 10^{-2}, B($\phi(1020) \to K^+K^-$) = (50.1 ± 0.6) × 10^{-2}. Our first error is their experiment's error and our second error is the systematic error from using our best values.

NODE=S086P84;LINKAGE=A

$\Gamma(f_2'(1525)\gamma)/\Gamma(\phi\gamma)$ $\Gamma_{163}/\Gamma_{161}$

NODE=S086P85

VALUE (%)	DOCUMENT ID	TECN	COMMENT
$\mathbf{19.5^{+1.8}_{-1.1}}$ **OUR AVERAGE** [$(19.4^{+1.8}_{-1.1})$% OUR 2025 AVERAGE]			
$\mathbf{19.5^{+1.7}_{-1.0} \pm 0.5}$	[1] AAIJ 24S	LHCB	pp at 7, 8, 13 TeV

NEW

[1] AAIJ 24S reports [$\Gamma(B_s^0 \to f_2'(1525)\gamma)/\Gamma(B_s^0 \to \phi\gamma)$] × B($f_2'(1525) \to K^+K^-$) / B($\phi(1020) \to K^+K^-$) = $17.3^{+0.8}_{-0.7}{}^{+1.3}_{-0.5}$% which we divide and multiply by our best values B($f_2'(1525) \to K^+K^-$) = $\frac{1}{2}$ (88.8 ± 2.2) × 10^{-2}, B($\phi(1020) \to K^+K^-$) = (50.1 ± 0.6) × 10^{-2}. Our first error is their experiment's error and our second error is the systematic error from using our best values.

NODE=S086P85;LINKAGE=A

$\Gamma(\phi(1680)\gamma,\ \phi \to K^+K^-)/\Gamma(\phi\gamma)$ $\Gamma_{164}/\Gamma_{161}$

NODE=S086P86

VALUE (%)	DOCUMENT ID		TECN	COMMENT
2.7 ±0.7 OUR AVERAGE [(2.7 ± 0.6)% OUR 2025 AVERAGE]				
$2.71^{+0.67}_{-0.63}\pm0.03$	[1] AAIJ	24S	LHCB	pp at 7, 8, 13 TeV

NEW

[1] AAIJ 24S reports $[\Gamma(B^0_s \to \phi(1680)\gamma,\ \phi \to K^+K^-)/\Gamma(B^0_s \to \phi\gamma)]$ / $[B(\phi(1020) \to K^+K^-)] = 5.4^{+0.9}_{-0.6}{}^{+1.0}_{-1.1}$ % which we multiply by our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086P86;LINKAGE=A

$\Gamma(\phi_3(1850)\gamma,\ \phi_3 \to K^+K^-)/\Gamma(\phi\gamma)$ $\Gamma_{165}/\Gamma_{161}$

NODE=S086P87

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$0.200^{+0.181}_{-0.142}\pm0.002$	[1] AAIJ	24S	LHCB	pp at 7, 8, 13 TeV

[1] AAIJ 24S reports $[\Gamma(B^0_s \to \phi_3(1850)\gamma,\ \phi_3 \to K^+K^-)/\Gamma(B^0_s \to \phi\gamma)]$ / $[B(\phi(1020) \to K^+K^-)] = 0.4^{+0.3}_{-0.2}{}^{+0.2}_{-0.2}$ % which we multiply by our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086P87;LINKAGE=A

$\Gamma(f_2(2010)\gamma,\ f_2 \to K^+K^-)/\Gamma(\phi\gamma)$ $\Gamma_{166}/\Gamma_{161}$

NODE=S086P88

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$0.301^{+0.213}_{-0.142}\pm0.003$	[1] AAIJ	24S	LHCB	pp at 7, 8, 13 TeV

[1] AAIJ 24S reports $[\Gamma(B^0_s \to f_2(2010)\gamma,\ f_2 \to K^+K^-)/\Gamma(B^0_s \to \phi\gamma)]$ / $[B(\phi(1020) \to K^+K^-)] = 0.6^{+0.3}_{-0.2}{}^{+0.3}_{-0.2}$ % which we multiply by our best (shown rounded) value $B(\phi(1020) \to K^+K^-) = (50.1 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=S086P88;LINKAGE=A

$\Gamma(\mu^+\mu^-)/\Gamma_{total}$ Γ_{167}/Γ

NODE=S086R14

Test for $\Delta B = 1$ weak neutral current.

VALUE (units 10^{-9})	CL%	DOCUMENT ID		TECN	COMMENT
3.34±0.27 OUR AVERAGE					
$3.83^{+0.38}_{-0.36}{}^{+0.24}_{-0.21}$		[1] TUMASYAN	23A	CMS	pp at 13 TeV
$3.09^{+0.46}_{-0.43}{}^{+0.15}_{-0.11}$		AAIJ	22	LHCB	pp at 7, 8, 13 TeV
$2.9 \pm0.6 \pm0.4$		[2] SIRUNYAN	20AG	CMS	pp at 7, 8, 13 TeV
$2.8^{+0.8}_{-0.7}$		[3] AABOUD	19L	ATLS	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$3.0 \pm0.6 {}^{+0.3}_{-0.2}$		AAIJ	17AI	LHCB	Repl. by AAIJ 22
$0.9^{+1.1}_{-0.8}$		[4] AABOUD	16L	ATLS	Repl. by AABOUD 19L
$2.8^{+0.7}_{-0.6}$		[5] KHACHATRY...	15BE	LHC	pp at 7, 8 TeV
$3.2^{+1.4}_{-1.2}{}^{+0.5}_{-0.3}$		[6] AAIJ	13B	LHCB	Repl. by AAIJ 13BA
$2.9^{+1.1}_{-1.0}{}^{+0.3}_{-0.1}$		[7] AAIJ	13BA	LHCB	Repl. by KHACHATRYAN 15BE
13^{+9}_{-7}		[8] AALTONEN	13F	CDF	$p\overline{p}$ at 1.96 TeV
<12	90	[9] ABAZOV	13C	D0	$p\overline{p}$ at 1.96 TeV
$3.0^{+1.0}_{-0.9}$		[10] CHATRCHYAN	13AW	CMS	Repl. by SIRUNYAN 20AG
<19	90	[11] AAD	12AE	ATLS	pp at 7 TeV
<12	90	[12] AAIJ	12A	LHCB	Repl. by AAIJ 12W
< 3.8	90	[13] AAIJ	12W	LHCB	Repl. by AAIJ 13B
< 6.4	90	[14] CHATRCHYAN	12A	CMS	pp at 7 TeV
<43	90	[15] AAIJ	11B	LHCB	Repl. by AAIJ 12A
<35	90	[16] AALTONEN	11AG	CDF	$p\overline{p}$ at 1.96 TeV
<16	90	[17] CHATRCHYAN	11T	CMS	Repl. by CHATRCHYAN 12A
<42	90	[18] ABAZOV	10S	D0	$p\overline{p}$ at 1.96 TeV

OCCUR=2

[1] Uses normalization mode B($B^+ \to J/\psi K^+$) = (1.020 ± 0.019) × 10^{-3}, B($J/\psi \to \mu^+\mu^-$) = (5.961 ± 0.033) × 10^{-2} and B production ratio f($b \to B^0_s$)/f($b \to B^+$) = 0.231 ± 0.008. NODE=S086R14;LINKAGE=F
[2] Uses normalization mode B($B^+ \to J/\psi K^+$) = (1.01 ± 0.03) × 10^{-3} and B production ratio f($b \to B^0_s$)/f($b \to B^+$) = 0.252 ± 0.012 ± 0.015. NODE=S086R14;LINKAGE=E
[3] Uses normalization mode B($B^+ \to J/\psi K^+$) = (1.010 ± 0.029) × 10^{-3} and B production ratio f($b \to B^0_s$)/f($b \to B^0$) = 0.256 ± 0.013. NODE=S086R14;LINKAGE=G
[4] This value corresponds to an upper limit of < 3.0 × 10^{-9} at 95% C.L. It uses f_s/f_d = 0.24 ± 0.02. NODE=S086R14;LINKAGE=D
[5] Determined from the joint fit to CMS and LHCb data. Uncertainty includes both statistical and systematic component. NODE=S086R14;LINKAGE=B
[6] Uses B production ratio f($\overline{b} \to B^0_s$)/f($\overline{b} \to B^0_d$) = 0.256 ± 0.020 and two normalization modes: B($B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$) = (6.01 ± 0.21) × 10^{-5} and B($B^0 \to K^+\pi^-$) = (1.94 ± 0.06) × 10^{-5}. NODE=S086R14;LINKAGE=A
[7] Uses B production ratio f($\overline{b} \to B^0_s$)/f($\overline{b} \to B^0_d$) = 0.259 ± 0.015 and normalization modes $B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$ and $B^0 \to K^+\pi^-$. NODE=S086R14;LINKAGE=IA
[8] Uses normalization mode B($B^+ \to J/\psi K^+$) = (10.22 ± 0.35) × 10^{-4} and B production ratio f($\overline{b} \to B^0_s$)/f($\overline{b} \to B^0_d$) = 0.28 ± 0.04. NODE=S086R14;LINKAGE=AN
[9] Uses normalization mode B($B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$) = (6.01 ± 0.21) × 10^{-5} and B production ratio f($\overline{b} \to B^0_s$)/f($\overline{b} \to B^0_d$) = 0.263 ± 0.017. NODE=S086R14;LINKAGE=BA
[10] Uses B production ratio f($\overline{b} \to B^0_s$)/f($\overline{b} \to B^0_d$) = 0.256 ± 0.020 and B($B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$) = (6.0 ± 0.2) × 10^{-5} for normalization. NODE=S086R14;LINKAGE=CT
[11] Uses B production ratio f($\overline{b} \to B^+$)/f($\overline{b} \to B^0_s$) = 3.75 ± 0.29 and B($B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$) = (6.0 ± 0.2) × 10^{-5}. NODE=S086R14;LINKAGE=AD
[12] Uses B production ratio f($\overline{b} \to B^0_s$)/f($\overline{b} \to B^0_d$) = $0.267^{+0.021}_{-0.020}$ and three normalization modes B($B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$) = (6.01 ± 0.21) × 10^{-5}, B($B^0 \to K^+\pi^-$) = (1.94 ± 0.06) × 10^{-5}, and B($B^0_s \to J/\psi\phi \to \mu^+\mu^- K^+ K^-$) = (3.4 ± 0.9) × 10^{-5}. NODE=S086R14;LINKAGE=AJ
[13] Uses B production ratio f($\overline{b} \to B^0_s$)/f($\overline{b} \to B^0_d$) = $0.267^{+0.021}_{-0.020}$ and three normalization modes of $B^+ \to J/\psi K^+$, $B^0 \to K^+\pi^-$, and $B^0_s \to J/\psi\phi$. NODE=S086R14;LINKAGE=IJ
[14] Uses f_s/f_u = 0.267 ± 0.021 and B($B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$) = (6.0 ± 0.2) × 10^{-5}. NODE=S086R14;LINKAGE=CA
[15] Uses B production ratio f($\overline{b} \to B^+$)/f($\overline{b} \to B^0_s$) = 3.71 ± 0.47 and three normalization modes. NODE=S086R14;LINKAGE=AI
[16] Uses B production ratio f($\overline{b} \to B^+$)/f($\overline{b} \to B^0_s$) = 3.55 ± 0.47 and B($B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$) = (6.01 ± 0.21) × 10^{-5}. NODE=S086R14;LINKAGE=AT
[17] Uses B production ratio f($\overline{b} \to B^+$)/f($\overline{b} \to B^0_s$) = 3.55 ± 0.42 and B($B^+ \to J/\psi K^+ \to \mu^+\mu^- K^+$) = (6.0 ± 0.2) × 10^{-5}. NODE=S086R14;LINKAGE=CH
[18] Uses B production ratio f($\overline{b} \to B^+$)/f($\overline{b} \to B^0_s$) = 3.86 ± 0.59, and the number of $B^+ \to J/\psi K^+$ decays. NODE=S086R14;LINKAGE=AA

$\Gamma(e^+e^-)/\Gamma_{total}$ Γ_{168}/Γ

NODE=S086R18
NODE=S086R18
NODE=S086R18

Test for $\Delta B = 1$ weak neutral current.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<9.4 × 10^{-9}	90	[1] AAIJ	20W	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2.8 × 10^{-7}	90	AALTONEN	09P	CDF	$p\overline{p}$ at 1.96 TeV
<5.4 × 10^{-5}	90	[2] ACCIARRI	97B	L3	$e^+e^- \to Z$

[1] Assumes no contribution from $B^0 \to e^+e^-$ decays. NODE=S086R18;LINKAGE=A
[2] ACCIARRI 97B assume PDG 96 production fractions for B^+, B^0, B_s, and Λ_b. NODE=S086R18;LINKAGE=BQ

$\Gamma(\tau^+\tau^-)/\Gamma_{total}$ Γ_{169}/Γ

NODE=S086P27
NODE=S086P27

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.8 × 10^{-3}	95	[1] AAIJ	17AJ	LHCB	pp at 7, 8 TeV

[1] Assuming no contribution from $B^0 \to \tau^+\tau^-$. NODE=S086P27;LINKAGE=A

$\Gamma(\mu^+\mu^-\gamma)/\Gamma_{total}$ Γ_{170}/Γ

NODE=S086P67
NODE=S086P67

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.2 × 10^{-8}	95	[1] AAIJ	24Q	LHCB	pp at 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2.0 × 10^{-9}	95	[2,3] AAIJ	22	LHCB	pp at 7, 8, 13 TeV

[1] The exclusion limit is quoted at 95% CL for the dimuon mass region [3.92 − $m_{B^0_s}$] GeV/c^2. The limits are also reported for other dimuon mass regions: $< 4.2 \times 10^{-8}$ in [2m_μ − 1.7] GeV/c^2; $< 7.7 \times 10^{-8}$ in [1.70–2.88] GeV/c^2; $< 2.8 \times 10^{-8}$ in [2m_μ − 1.7] GeV/c^2 and excluding ϕ mass. NODE=S086P67;LINKAGE=B

[2] The exclusion is limited to the range $m_{\mu\mu}$ >4.9 GeV/c^2. NODE=S086P67;LINKAGE=A

[3] For the mass region 4.9 − $m_{B^0_s}$ GeV/c^2. NODE=S086P67;LINKAGE=C

$\Gamma(\mu^+\mu^-\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{171}/Γ

NODE=S086R59
NODE=S086R59

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8.6 × 10^{-10}	95	AAIJ	22Q	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2.5 × 10^{-9}	95	AAIJ	17N	LHCB	pp at 7, 8 TeV
<1.6 × 10^{-8}	95	[1] AAIJ	13AW	LHCB	Repl. by AAIJ 17N

[1] Also reports a limit of $< 1.2 \times 10^{-8}$ at 90% CL. NODE=S086R59;LINKAGE=AA

$\Gamma(\overline{D}^0\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{178}/Γ

NODE=S086P79
NODE=S086P79

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.2 × 10^{-7}	90	AAIJ	24F	LHCB	pp at 7, 8, 13 TeV

$\Gamma(SP,\ S\to\mu^+\mu^-,\ P\to\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{172}/Γ

NODE=S086R64

Here S and P are the hypothetical scalar and pseudoscalar particles with masses of 2.5 GeV/c^2 and 214.3 MeV/c^2, respectively. NODE=S086R64

NODE=S086R64

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.2 × 10^{-9}	95	AAIJ	17N	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.2 × 10^{-8}	90	[1] AAIJ	13AW	LHCB	Repl. by AAIJ 17N

[1] Also reports a limit of $< 1.6 \times 10^{-8}$ at 95% CL. NODE=S086R64;LINKAGE=AA

$\Gamma(aa,\ a\to\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{173}/Γ

NODE=S086P64

Here particle a is a scalar with a mass of 1 GeV/c^2. NODE=S086P64

NODE=S086P64

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.8 × 10^{-10}	95	AAIJ	22Q	LHCB	pp at 7, 8, 13 TeV

$\Gamma(\phi(1020)\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{174}/Γ

NODE=S086R31

Test for $\Delta B = 1$ weak neutral current. NODE=S086R31

NODE=S086R31

VALUE (units 10^{-7})	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<32	90	[1] ABAZOV	06G	D0	$p\overline{p}$ at 1.96 TeV
< 4.7 × 10^2	90	ACOSTA	02D	CDF	$p\overline{p}$ at 1.8 TeV

[1] Uses B($B^0_s \to J/\psi\phi$) = 9.3×10^{-4}. NODE=S086R31;LINKAGE=AB

$\Gamma(\phi(1020)\mu^+\mu^-)/\Gamma(J/\psi(1S)\phi)$ Γ_{174}/Γ_{69}

NODE=S086R51
NODE=S086R51

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
0.806±0.026 OUR AVERAGE					
0.800±0.021±0.016		AAIJ	21AG	LHCB	pp at 7, 8, 13 TeV
1.13 ±0.19 ±0.07		AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.741^{+0.042}_{-0.040}\pm0.029$		AAIJ	15AQ	LHCB	Repl. by AAIJ 21AG
$0.674^{+0.061}_{-0.056}\pm0.016$		AAIJ	13X	LHCB	Repl. by AAIJ 15AQ
1.11 ±0.25 ±0.09		AALTONEN	11L	CDF	Repl. by AALTONEN 11AI
< 2.3	90	AALTONEN	09B	CDF	Repl. by AALTONEN 11L

$\Gamma(\overline{K}^*(892)^0\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{176}/Γ

NODE=S086P36
NODE=S086P36

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
2.9±1.0±0.4	[1] AAIJ	18AB	LHCB	pp at 7, 8, 13 TeV

[1] Normalizes to B($B^0 \to J/\psi K^{*0}$) = 1.19 ± 0.01 ± 0.08% and B($J/\psi \to \mu^+\mu^-$) = 5.96 ± 0.03%, and uses f_s/f_d = 0.259 ± 0.015. NODE=S086P36;LINKAGE=B

$\Gamma(f'_2(1525)\mu^+\mu^-)/\Gamma(J/\psi(1S)\phi)$ Γ_{175}/Γ_{69}

NODE=S086P61
NODE=S086P61

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.55±0.19±0.08	[1] AAIJ	21AG	LHCB	pp at 7, 8, 13 TeV

[1] Measured by combining the q^2 regions [0.1, 0.98], [1.1, 8.0], and [11.0, 12.5] GeV^2/c^4. NODE=S086P61;LINKAGE=A

$\Gamma(\pi^+\pi^-\mu^+\mu^-)/\Gamma_{total}$ Γ_{177}/Γ

NODE=S086P16
NODE=S086P16

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
8.4±1.6±0.3	[1] AAIJ	15S	LHCB	pp at 7, 8 TeV

[1] AAIJ 15S reports $(8.6 \pm 1.5 \pm 0.7 \pm 0.7) \times 10^{-8}$ from a measurement of $[\Gamma(B^0_s \to \pi^+\pi^-\mu^+\mu^-)/\Gamma_{total}]$ / $[B(B^0 \to J/\psi(1S) K^*(892)^0)]$ assuming $B(B^0 \to J/\psi(1S) K^*(892)^0) = (1.3 \pm 0.1) \times 10^{-3}$, which we rescale to our best (shown rounded) value $B(B^0 \to J/\psi(1S) K^*(892)^0) = (1.27 \pm 0.05) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=S086P16;LINKAGE=A

$\Gamma(\phi\nu\overline{\nu})/\Gamma_{total}$ Γ_{179}/Γ

NODE=S086R21

Test for $\Delta B = 1$ weak neutral current.

NODE=S086R21
NODE=S086R21

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.4 × 10^{-3}	90	[1] ADAM	96D	DLPH	$e^+e^- \to Z$

[1] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$.

NODE=S086R21;LINKAGE=DQ

$\Gamma(\text{invisible})/\Gamma_{total}$ Γ_{180}/Γ

NODE=S086P78
NODE=S086P78

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.6 \times 10^{-4}$	90	[1] ALONSO-ALV..24		THEO	$e^+e^- \to Z$

[1] A reinterpretation of an old inclusive ALEPH search for b-hadron decays with large missing energy reported in BARATE 01E.

NODE=S086P78;LINKAGE=A

$\Gamma(e^\pm\mu^\mp)/\Gamma_{total}$ Γ_{181}/Γ

NODE=S086R22

Test of lepton family number conservation.

NODE=S086R22
NODE=S086R22

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.4 × 10^{-9}	90	[1] AAIJ	18T	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.1 \times 10^{-8}$	90	[2] AAIJ	13BM	LHCB	Repl. by AAIJ 18T
$<2.0 \times 10^{-7}$	90	AALTONEN	09P	CDF	$p\overline{p}$ at 1.96 TeV
$<6.1 \times 10^{-6}$	90	ABE	98V	CDF	Repl. by AALTONEN 09P
$<4.1 \times 10^{-5}$	90	[3] ACCIARRI	97B	L3	$e^+e^- \to Z$

[1] AAIJ 18T uses normalization modes $B(B^0 \to K^+\pi^-) = (19.6 \pm 0.5) \times 10^{-6}$ and $B(B^+ \to J/\psi K^+) = (1.026 \pm 0.031) \times 10^{-3}$ with B production ratio $f(\overline{b} \to B^0_s)/f(\overline{b} \to B^0_d) = 0.259 \pm 0.015$. The upper limit increases to 6×10^{-9} with the assumption of B_L-dominated decay amplitude.

NODE=S086R22;LINKAGE=A

[2] Uses normalization mode $B(B^0 \to K^+\pi^-) = (19.4 \pm 0.6) \times 10^{-6}$ and B production ratio $f(\overline{b} \to B^0_s)/f(\overline{b} \to B^0_d) = 0.256 \pm 0.020$.

NODE=S086R22;LINKAGE=AA

[3] ACCIARRI 97B assume PDG 96 production fractions for B^+, B^0, B_s, and Λ_b.

NODE=S086R22;LINKAGE=BQ

$\Gamma(e^\pm\tau^\mp)/\Gamma_{total}$ Γ_{182}/Γ

NODE=S086P68
NODE=S086P68

VALUE	CL%	DOCUMENT ID		COMMENT
<1.4 × 10^{-3}	90	[1] NAYAK	23	$e^+e^- \to \Upsilon(4S)$

[1] Reconstructs the accompanying B^0_s meson in the semileptonic decay modes.

NODE=S086P68;LINKAGE=A

$\Gamma(\mu^\pm\tau^\mp)/\Gamma_{total}$ Γ_{183}/Γ

NODE=S086P48
NODE=S086P48

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.2 × 10^{-5}	95	[1] AAIJ	19AK	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<7.3 \times 10^{-4}$	90	[2] NAYAK	23	BELL	$e^+e^- \to \Upsilon(4S)$

OCCUR=2

[1] Assuming no contribution from $B^0 \to \mu^\pm\tau^\mp$.

NODE=S086P48;LINKAGE=A

[2] Reconstructs the accompanying B^0_s meson in the semileptonic decay modes.

NODE=S086P48;LINKAGE=C

$\Gamma(\phi\mu^\pm e^\mp)/\Gamma_{total}$ Γ_{184}/Γ

NODE=S086P73
NODE=S086P73

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.6 × 10^{-8}	90	[1] AAIJ	23G	LHCB	pp at 7, 8, 13 TeV

[1] Uses the uniform phase space model for the signal decays.

NODE=S086P73;LINKAGE=B

$\Gamma(\phi\mu^\pm\tau^\mp)/\Gamma_{total}$ Γ_{185}/Γ

NODE=S086P89
NODE=S086P89

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.0 × 10^{-5}	90	AAIJ	24AK	LHCB	pp at 7, 8 and 13 TeV

$\Gamma(p\mu^-)/\Gamma_{total}$ Γ_{186}/Γ

NODE=S086P76

VALUE	CL%	DOCUMENT ID		COMMENT
$<1.21\times10^{-8}$	90	[1] AAIJ	23Y	pp at 7, 8, 13 TeV

[1] Assumes that B_s^0 decay branching fractions to $p\mu^-$ and $\overline{p}\mu^+$ are the same.

NODE=S086P76;LINKAGE=A

POLARIZATION IN B_s^0 DECAY

NODE=S086233

In decays involving two vector mesons, one can distinguish among the states in which meson polarizations are both longitudinal (L), or both are transverse and parallel ($\parallel$), or perpendicular ($\perp$) to each other with the parameters Γ_L/Γ, $\Gamma_\perp/\Gamma$, and the relative phases $\phi_\parallel$ and $\phi_\perp$. In decays involving two tensor mesons, the transverse polarization states are described by parameters $\Gamma_{\parallel 1}$, $\Gamma_{\parallel 2}$, $\Gamma_{\perp 1}$, $\Gamma_{\perp 2}$ and their relative phases $\phi_{\parallel 1}$, $\phi_{\parallel 2}$, $\phi_{\perp 1}$, $\phi_{\perp 2}$. See also the review on "Polarization in B Decays."

Γ_L/Γ in $B_s^0 \to D_s^* \rho^+$

NODE=S086P01

VALUE	DOCUMENT ID		TECN	COMMENT
$1.05^{+0.08}_{-0.10}{}^{+0.03}_{-0.04}$	LOUVOT	10	BELL	$e^+e^- \to \Upsilon(5S)$

Γ_L/Γ in $B_s^0 \to J/\psi(1S)\phi$

NODE=S086P1

0.518 ±0.004 OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below. [0.5194 ± 0.0034 OUR 2025 AVERAGE Scale factor = 1.5]

NEW

VALUE	DOCUMENT ID		TECN	COMMENT
$0.5300\pm0.0015\pm0.0086$	[1] HAYRAPETY...	26A	CMS	pp at 13 TeV
$0.5179\pm0.0017\pm0.0032$	[2] AAIJ	24A	LHCB	pp at 13 TeV
$0.5152\pm0.0012\pm0.0034$	[3] AAD	21AE	ATLS	pp at 7, 8, 13 TeV
$0.524\pm0.013\pm0.015$	[4] AALTONEN	12D	CDF	$p\overline{p}$ at 1.96 TeV
$0.558^{+0.017}_{-0.019}$	[4,5] ABAZOV	12D	D0	$p\overline{p}$ at 1.96 TeV
$0.61\pm0.14\pm0.02$	[6] AFFOLDER	00N	CDF	$p\overline{p}$ at 1.8 TeV
$0.56\pm0.21{}^{+0.02}_{-0.04}$	ABE	95Z	CDF	$p\overline{p}$ at 1.8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.5350\pm0.0047\pm0.0049$	[4] SIRUNYAN	21E	CMS	pp at 13 TeV
$0.5289\pm0.0038\pm0.0041$	[4] SIRUNYAN	21E	CMS	Repl. by HAYRAPETYAN 26A
$0.5186\pm0.0029\pm0.0023$	AAIJ	19Q	LHCB	Repl. by AAIJ 24A
$0.522\pm0.003\pm0.007$	[3] AAD	16AP	ATLS	Repl. by AAD 21AE
$0.510\pm0.005\pm0.011$	[4] KHACHATRY...	16S	CMS	pp at 8 TeV
$0.5241\pm0.0034\pm0.0067$	AAIJ	15I	LHCB	Repl. by AAIJ 19Q
$0.529\pm0.006\pm0.012$	[3] AAD	14U	ATLS	Repl. by AAD 16AP
$0.539\pm0.014\pm0.016$	[4] AAD	12CV	ATLS	Repl. by AAD 14U
$0.555\pm0.027\pm0.006$	[7] ABAZOV	09E	D0	Repl. by ABAZOV 12D
$0.531\pm0.020\pm0.007$	[4] AALTONEN	08J	CDF	Repl. by AALTONEN 12D
$0.62\pm0.06\pm0.01$	ACOSTA	05	CDF	Repl. by AALTONEN 08J

OCCUR=2

[1] Measured using a time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm.

NODE=S086P1;LINKAGE=D

[2] Measured using a time-dependent angular analysis of $B_s^0 \to J/\psi K^+K^-$ decays.

NODE=S086P1;LINKAGE=C

[3] Measured using the flavor tagged, time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays.

NODE=S086P1;LINKAGE=A

[4] Measured using the time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays.

NODE=S086P1;LINKAGE=AC

[5] The error includes both statistical and systematic uncertainties.

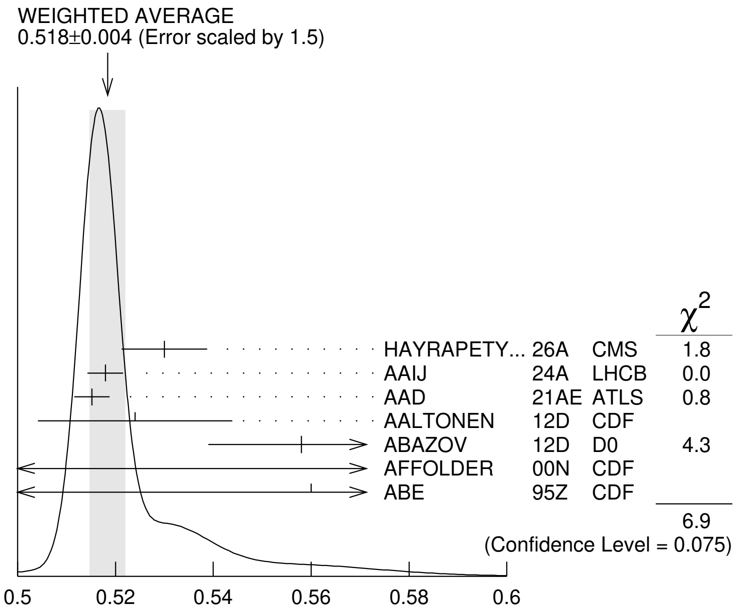
NODE=S086P1;LINKAGE=CE

[6] AFFOLDER 00N measurements are based on 40 B_s^0 candidates obtained from a data sample of 89 pb^{-1}. The P-wave fraction is found to be $0.23\pm0.19\pm0.04$.

NODE=S086P1;LINKAGE=P1

[7] Measured the angular and lifetime parameters for the time-dependent angular untagged decays $B_d^0 \to J/\psi K^{*0}$ and $B_s^0 \to J/\psi\phi$.

NODE=S086P1;LINKAGE=AB



Γ_L/Γ in $B_s^0 \to J/\psi(1S)\phi$

Γ_L/Γ in $B_s^0 \to D_s^{*+} D_s^{*-}$

NODE=S086P08
NODE=S086P08

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.06^{+0.18}_{-0.17}\pm0.03}$	ESEN	13	BELL	$e^+e^- \to \Upsilon(5S)$

$\Gamma_\parallel/\Gamma$ in $B_s^0 \to J/\psi(1S)\phi$

NODE=S086P2
NODE=S086P2

VALUE	DOCUMENT ID		TECN	COMMENT
0.2222±0.0027 OUR AVERAGE				
0.2220±0.0017±0.0021	[1] AAD	21AE	ATLS	pp at 7, 8, 13 TeV
0.231 ±0.014 ±0.015	[2] AALTONEN	12D	CDF	$p\overline{p}$ at 1.96 TeV
0.231 $^{+0.024}_{-0.030}$	[2,3] ABAZOV	12D	D0	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.227 ±0.004 ±0.006	[1] AAD	16AP	ATLS	Repl. by AAD 21AE
0.220 ±0.008 ±0.009	[1] AAD	14U	ATLS	Repl. by AAD 16AP
0.224 ±0.010 ±0.009	[2] AAD	12CV	ATLS	Repl. by AAD 14U
0.244 ±0.032 ±0.014	[4] ABAZOV	09E	D0	Repl. by ABAZOV 12D
0.230 ±0.029 ±0.011	[2] AALTONEN	08J	CDF	Repl. by AALTONEN 12D
0.260 ±0.084 ±0.013	ACOSTA	05	CDF	Repl. by AALTONEN 08J

[1] Measured using a tagged, time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays. NODE=S086P2;LINKAGE=A

[2] Measured using the time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays. NODE=S086P2;LINKAGE=AC

[3] The error includes both statistical and systematic uncertainties. NODE=S086P2;LINKAGE=CE

[4] Measured the angular and lifetime parameters for the time-dependent angular untagged decays $B_d^0 \to J/\psi K^{*0}$ and $B_s^0 \to J/\psi\phi$. NODE=S086P2;LINKAGE=AB

$\Gamma_\perp/\Gamma$ in $B_s^0 \to J/\psi(1S)\phi$

NODE=S086PP0
NODE=S086PP0
NEW

VALUE	DOCUMENT ID		TECN	COMMENT
0.2447±0.0028 OUR AVERAGE				
[0.2447 ± 0.0029 OUR 2025 AVERAGE]				
0.2409±0.0020±0.0047	[1] HAYRAPETY...	26A	CMS	pp at 13 TeV
0.2463±0.0023±0.0024	[2] AAIJ	24A	LHCB	pp at 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.2337±0.0063±0.0045	[3] SIRUNYAN	21E	CMS	pp at 13 TeV
0.2393±0.0050±0.0037	SIRUNYAN	21E	CMS	Repl. by HAYRAPETYAN 26A
0.2456±0.0040±0.0019	AAIJ	19Q	LHCB	Repl. by AAIJ 24A
0.243 ±0.008 ±0.012	KHACHATRY...	16S	CMS	pp at 8 TeV
0.2504±0.0049±0.0036	AAIJ	15I	LHCB	Repl. by AAIJ 19Q

OCCUR=2

[1] Measured using a time-dependent angular analysis of $B_s^0 \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm. NODE=S086PP0;LINKAGE=B

[2] Measured using a time-dependent angular analysis of $B_s^0 \to J/\psi K^+K^-$ decays. NODE=S086PP0;LINKAGE=A

[3] Measured with a combination of result from KHACHATRYAN 16S. NODE=S086PP0;LINKAGE=C

Γ_S/Γ in $B^0_s \to J/\psi(1S)\phi$

NODE=S086A60

$B^0_s \to J/\psi(1S)\phi$ in S-wave.

NODE=S086A60
NODE=S086A60

VALUE (units 10^{-3})	DOCUMENT ID	TECN	COMMENT
$6.7^{+3.4}_{-2.7}\pm1.3$	[1] HAYRAPETY...26A	CMS	pp at 13 TeV

[1] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm.

NODE=S086A60;LINKAGE=A

$\phi_\parallel$ in $B^0_s \to J/\psi(1S)\phi$

NODE=S086P03
NODE=S086P03

VALUE (rad)	DOCUMENT ID		TECN	COMMENT
3.19 ±0.05 OUR AVERAGE Error includes scale factor of 1.1. [3.22 ± 0.05 rad OUR 2025 AVERAGE]				
$3.145\pm0.077\pm0.033$	[1] HAYRAPETY...	26A	CMS	pp at 13 TeV
$3.146\pm0.061\pm0.052$	[2] AAIJ	24A	LHCB	pp at 13 TeV
$3.36\pm0.05\pm0.09$	[3] AAD	21AE	ATLS	pp at 7, 8, 13 TeV
3.15 ± 0.22	[4] ABAZOV	12D	D0	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$3.18\pm0.12\pm0.003$	SIRUNYAN	21E	CMS	pp at 13 TeV
$3.19\pm0.12\pm0.04$	SIRUNYAN	21E	CMS	Repl. by HAYRAPETYAN 26A
$3.06^{+0.08}_{-0.07}\pm0.04$	AAIJ	19Q	LHCB	Repl. by AAIJ 24A
$3.15\pm0.10\pm0.05$	AAD	16AP	ATLS	Repl. by AAD 21AE
$3.48^{+0.07}_{-0.09}\pm0.68$	KHACHATRY...	16S	CMS	pp at 8 TeV
$3.26^{+0.10}_{-0.17}{}^{+0.06}_{-0.07}$	AAIJ	15I	LHCB	Repl. by AAIJ 19Q
$2.72^{+1.12}_{-0.27}\pm0.26$	ABAZOV	09E	D0	Repl. by ABAZOV 12D

NEW

OCCUR=2

[1] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm.

NODE=S086P03;LINKAGE=C

[2] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays.

NODE=S086P03;LINKAGE=B

[3] The fit found another solution with $\phi_\parallel = 2.95 \pm 0.05 \pm 0.09$ rad.

NODE=S086P03;LINKAGE=A

[4] The error includes both statistical and systematic uncertainties.

NODE=S086P03;LINKAGE=CE

$\phi_\perp$ in $B^0_s \to J/\psi(1S)\phi$

NODE=S086P13
NODE=S086P13

VALUE (rad)	DOCUMENT ID		TECN	COMMENT
3.00 ±0.10 OUR AVERAGE Error includes scale factor of 1.6. See the ideogram below. [2.99 ± 0.12 rad OUR 2025 AVERAGE Scale factor = 1.9]				
$2.931\pm0.096\pm0.063$	[1,2] HAYRAPETY...	26A	CMS	pp at 13 TeV
$2.903^{+0.075}_{-0.074}\pm0.048$	[3] AAIJ	24A	LHCB	pp at 13 TeV
$3.22\pm0.10\pm0.05$	[4] AAD	21AE	ATLS	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$2.77\pm0.16\pm0.05$	[5] SIRUNYAN	21E	CMS	pp at 13 TeV
$2.78\pm0.15\pm0.06$	[5] SIRUNYAN	21E	CMS	Repl. by HAYRAPETYAN 26A
$2.64\pm0.13\pm0.10$	AAIJ	19Q	LHCB	Repl. by AAIJ 24A
$4.15\pm0.32\pm0.16$	[5] AAD	16AP	ATLS	Repl. by AAD 21AE
$2.98\pm0.36\pm0.66$	[5] KHACHATRY...	16S	CMS	pp at 8 TeV
$3.08^{+0.14}_{-0.15}\pm0.06$	AAIJ	15I	LHCB	Repl. by AAIJ 19Q
$3.89\pm0.47\pm0.11$	[5] AAD	14U	ATLS	Repl. by AAD 16AP

NEW

OCCUR=2

[1] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm.

NODE=S086P13;LINKAGE=D

[2] The difference between the P- and S-wave phases is also reported $\phi_{S_\perp} = \phi_S - \phi_\perp = 0.48^{+0.11}_{-0.16} \pm 0.07$ rad.

NODE=S086P13;LINKAGE=E

[3] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays.

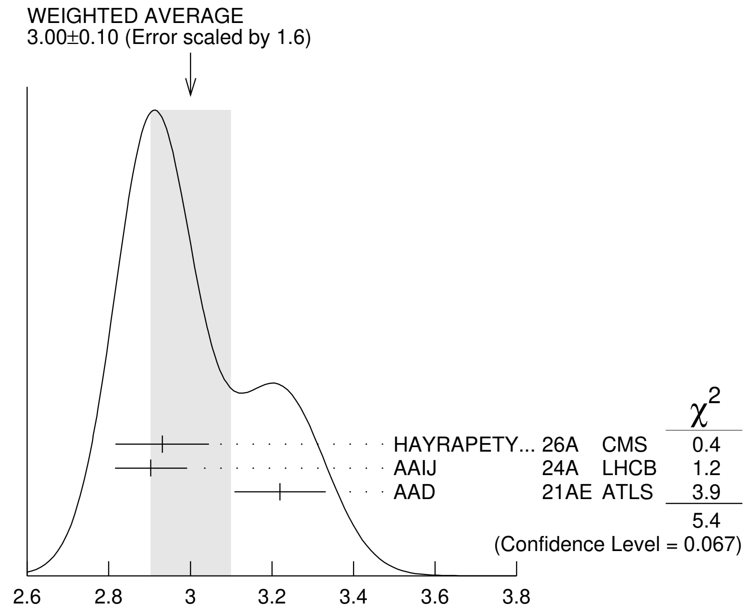
NODE=S086P13;LINKAGE=C

[4] The fit found another solution with $\phi_\perp = 3.03 \pm 0.05 \pm 0.09$ rad.

NODE=S086P13;LINKAGE=B

[5] Measured using a tagged, time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays.

NODE=S086P13;LINKAGE=A



$\phi_\perp$ in $B^0_s \to J/\psi(1S)\phi$ (rad)

$\Gamma_\perp/\Gamma$ in $B^0_s \to \psi(2S)\phi$

NODE=S086A06
NODE=S086A06

VALUE	DOCUMENT ID	TECN	COMMENT
$\mathbf{0.264^{+0.024}_{-0.023}\pm0.002}$	[1] AAIJ 16AK	LHCB	pp at 7, 8 TeV

[1] Measured using time-dependent angular analysis of $B^0_s \to \psi(2S)\phi$ decays.

NODE=S086A06;LINKAGE=A

$\phi_\parallel$ in $B^0_s \to \psi(2S)\phi$

NODE=S086A02
NODE=S086A02

VALUE (rad)	DOCUMENT ID	TECN	COMMENT
$\mathbf{3.67^{+0.13}_{-0.18}\pm0.03}$	[1] AAIJ 16AK	LHCB	pp at 7, 8 TeV

[1] Measured using time-dependent angular analysis of $B^0_s \to \psi(2S)\phi$ decays.

NODE=S086A02;LINKAGE=A

$\phi_\perp$ in $B^0_s \to \psi(2S)\phi$

NODE=S086A05
NODE=S086A05

VALUE (rad)	DOCUMENT ID	TECN	COMMENT
$\mathbf{3.29^{+0.43}_{-0.39}\pm0.04}$	[1] AAIJ 16AK	LHCB	pp at 7, 8 TeV

[1] Measured using time-dependent angular analysis of $B^0_s \to \psi(2S)\phi$ decays.

NODE=S086A05;LINKAGE=A

Γ_L/Γ for $B^0_s \to J/\psi(1S)\overline{K}^*(892)^0$

NODE=S086PK1

Longitudinal polarization fraction, equals to f_L using notation of "Polarization in B decays" review.

NODE=S086PK1

NODE=S086PK1

VALUE	DOCUMENT ID	TECN	COMMENT
0.528±0.014 OUR AVERAGE [0.497 ± 0.035 OUR 2025 AVERAGE]			NEW
0.528±0.011±0.009	[1] AAIJ 25AQ	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.534±0.012±0.009	AAIJ 25AQ	LHCB	pp at 13 TeV (OCCUR=2)
0.497±0.025±0.025	AAIJ 15AV	LHCB	Repl. by AAIJ 25AQ
0.50 ±0.08 ±0.02	[2] AAIJ 12AP	LHCB	Repl. by AAIJ 15AV

[1] Combination with measurement from AAIJ 15AV.

NODE=S086PK1;LINKAGE=A

[2] The non-resonant $K\pi$ background contributions are subtracted. Also reports an S-wave amplitude $|A_S|^2 = 0.07^{+0.15}_{-0.07}$.

NODE=S086PK1;LINKAGE=AA

$\Gamma_\parallel/\Gamma$ for $B^0_s \to J/\psi(1S)\overline{K}^*(892)^0$

NODE=S086PK2

Parallel polarization fraction, equals to $1 - f_L - f_\perp$ using notation of "Polarization in B decays" review.

NODE=S086PK2

NODE=S086PK2

VALUE	DOCUMENT ID	TECN	COMMENT
0.205±0.013 OUR AVERAGE [0.179 ± 0.030 OUR 2025 AVERAGE]			NEW
0.205±0.012±0.005	[1] AAIJ 25AQ	LHCB	pp at 7, 8, 13 TeV (OCCUR=2)
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.211±0.014±0.005	AAIJ 25AQ	LHCB	pp at 13 TeV
0.179±0.027±0.013	AAIJ 15AV	LHCB	Repl. by AAIJ 25AQ
$0.19^{+0.10}_{-0.08}\pm0.02$	[2] AAIJ 12AP	LHCB	Repl. by AAIJ 15AV

[1] Combination with measurement from AAIJ 15AV. NODE=S086PK2;LINKAGE=A

[2] The non-resonant $K\pi$ background contributions are subtracted. Also reports an S-wave amplitude $|A_S|^2 = 0.07^{+0.15}_{-0.07}$. NODE=S086PK2;LINKAGE=AA

$\phi_\parallel$ in $B^0_s \to J/\psi(1S)\overline{K}^*(892)^0$

NODE=S086A58

VALUE	DOCUMENT ID		TECN	COMMENT
2.879±0.085±0.018	AAIJ	25AQ	LHCB	pp at 13 TeV

$\phi_\perp$ in $B^0_s \to J/\psi(1S)\overline{K}^*(892)^0$

NODE=S086A59

VALUE	DOCUMENT ID		TECN	COMMENT
0.057±0.065±0.018	AAIJ	25AQ	LHCB	pp at 13 TeV

$\Gamma_\parallel/\Gamma$ of $K^*(892)^0$ in $B^0_s \to \psi(2S)\overline{K}^*(892)^0$

NODE=S086PK3

VALUE	DOCUMENT ID		TECN	COMMENT
0.524±0.056±0.029	AAIJ	15U	LHCB	pp at 7, 8 TeV

Γ_L/Γ in $B^0_s \to \phi\phi$

NODE=S086P05

VALUE	DOCUMENT ID		TECN	COMMENT
0.379±0.008 OUR AVERAGE	Error includes scale factor of 1.2.			
0.384±0.007±0.003	AAIJ	23AT	LHCB	pp at 13 TeV
0.364±0.012±0.009	AAIJ	14AE	LHCB	pp at 7, 8 TeV
0.348±0.041±0.021	AALTONEN	11AN	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.381±0.007±0.012	AAIJ	19AP	LHCB	pp at 7, 8, partial 13 TeV
0.365±0.022±0.012	AAIJ	12P	LHCB	Repl. by AAIJ 14AE

$\Gamma_\perp/\Gamma$ in $B^0_s \to \phi\phi$

NODE=S086P06

VALUE	DOCUMENT ID		TECN	COMMENT
0.310±0.006 OUR AVERAGE				
0.310±0.006±0.003	AAIJ	23AT	LHCB	pp at 13 TeV
0.305±0.013±0.005	AAIJ	14AE	LHCB	pp at 7, 8 TeV
0.365±0.044±0.027	AALTONEN	11AN	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.290±0.008±0.005	[1] AAIJ	19AP	LHCB	pp at 7, 8, partial 13 TeV
0.291±0.024±0.010	AAIJ	12P	LHCB	Repl. by AAIJ 14AE

[1] Note: in the summary of AAIJ 19AP the systematic uncertainty is 0.007. We take the systematic uncertainty as given in Table 5 in the paper. NODE=S086P06;LINKAGE=A

$\phi_\parallel$ in $B^0_s \to \phi\phi$

NODE=S086P07

VALUE (rad)	DOCUMENT ID		TECN	COMMENT
2.469±0.029 OUR AVERAGE				
2.463±0.029±0.009	AAIJ	23AT	LHCB	pp at 13 TeV
2.54 ±0.07 ±0.09	[1] AAIJ	14AE	LHCB	pp at 7, 8 TeV
2.71 $^{+0.31}_{-0.36}$ ±0.22	[2] AALTONEN	11AN	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.559±0.045±0.033	AAIJ	19AP	LHCB	pp at 7, 8, partial 13 TeV
2.57 ±0.15 ±0.06	[3] AAIJ	12P	LHCB	Repl. by AAIJ 14AE

[1] AAIJ 14AE reports measurement of $\phi_\perp$ and $\phi_\perp - \phi_\parallel$, which we convert into $\phi_\parallel$. Statistical uncertainty includes correlation between measured parameters, while systematic uncertainties are assumed uncorrelated. NODE=S086P07;LINKAGE=A

[2] AALTONEN 11AN quotes $\cos\phi_\parallel = -0.91^{+0.15}_{-0.13} \pm 0.09$ which we convert to $\phi_\parallel$ taking the smaller solution. NODE=S086P07;LINKAGE=AA

[3] AAIJ 12P quotes $\cos\phi_\parallel = -0.844 \pm 0.068 \pm 0.029$ which we convert to $\phi_\parallel$, taking the smaller solution. NODE=S086P07;LINKAGE=AI

$\phi_\perp$ in $B^0_s \to \phi\phi$

NODE=S086P12

VALUE (rad)	DOCUMENT ID		TECN	COMMENT
2.75 ±0.10 OUR AVERAGE				
2.769±0.105±0.011	AAIJ	23AT	LHCB	pp at 13 TeV
2.67 ±0.23 ±0.07	AAIJ	14AE	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.818±0.178±0.073	AAIJ	19AP	LHCB	pp at 7, 8, partial 13 TeV

Γ_L/Γ in $B_s^0 \to K^{*0}\overline{K}^{*0}$

NODE=S086P02

VALUE	DOCUMENT ID		TECN	COMMENT
0.240±0.031±0.025	[1] AAIJ	19L	LHCB	pp at 7 and 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.208±0.032±0.046	[2] AAIJ	18S	LHCB	Repl. by AAIJ 19L
0.201±0.057±0.040	[3] AAIJ	15AF	LHCB	Repl. by AAIJ 18S
0.31 ±0.12 ±0.04	AAIJ	12F	LHCB	Repl. by AAIJ 15AF

[1] Untagged and time-integrated analysis within 150 MeV of the K^{*0} mass. NODE=S086P02;LINKAGE=C
[2] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions. NODE=S086P02;LINKAGE=B
[3] Measured in angular analysis, which takes into account S-wave contributions. NODE=S086P02;LINKAGE=A

$\Gamma_\perp/\Gamma$ in $B_s^0 \to K^{*0}\overline{K}^{*0}$

NODE=S086P04

VALUE	DOCUMENT ID		TECN	COMMENT
0.38±0.11±0.04	AAIJ	12F	LHCB	pp at 7 TeV

$\Gamma_\parallel/\Gamma$ in $B_s^0 \to K^*(892)^0\overline{K}^*(892)^0$

NODE=S086P17

VALUE	DOCUMENT ID		TECN	COMMENT
0.297±0.029±0.042	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.215±0.046±0.015	AAIJ	15AF	LHCB	Repl. by AAIJ 18S

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions. NODE=S086P17;LINKAGE=A

$\Phi_\parallel$ in $B_s^0 \to K^*(892)^0\overline{K}^*(892)^0$

NODE=S086P18

VALUE	DOCUMENT ID		TECN	COMMENT
2.40±0.11±0.33	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
5.31±0.24±0.14	AAIJ	15AF	LHCB	Repl. by AAIJ 18S

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions. NODE=S086P18;LINKAGE=A

$\Phi_\perp$ in $B_s^0 \to K^*(892)^0\overline{K}^*(892)^0$

NODE=S086A11

VALUE (rad)	DOCUMENT ID		TECN	COMMENT
2.62±0.26±0.64	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions. NODE=S086A11;LINKAGE=A

Γ_L/Γ in $B_s^0 \to \phi\overline{K}^{*0}$

NODE=S086P09

VALUE	DOCUMENT ID		TECN	COMMENT
0.51±0.15±0.07	AAIJ	13BW	LHCB	pp at 7 TeV

$\Gamma_\parallel/\Gamma$ in $B_s^0 \to \phi\overline{K}^{*0}$

NODE=S086P10

VALUE	DOCUMENT ID		TECN	COMMENT
0.21±0.11±0.02	AAIJ	13BW	LHCB	pp at 7 TeV

$\phi_\parallel$ in $B_s^0 \to \phi\overline{K}^{*0}$

NODE=S086P11

VALUE (rad)	DOCUMENT ID		TECN	COMMENT
1.75±0.53±0.29	[1] AAIJ	13BW	LHCB	pp at 7 TeV

[1] Measures $\cos(\phi_\parallel) = -0.18 \pm 0.52 \pm 0.29$, which we convert to $\phi_\parallel$ by taking the smaller solution. NODE=S086P11;LINKAGE=AA

Γ_L/Γ in $B_s^0 \to \overline{D}^{*0}\phi$

NODE=S086A22

VALUE	DOCUMENT ID		TECN	COMMENT
0.531±0.060±0.019	AAIJ	23AZ	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.73 ±0.15 ±0.04	AAIJ	18AY	LHCB	Repl. by AAIJ 23AZ

Γ_L/Γ in $B_s^0 \to K^*(892)^0\overline{K}_2^*(1430)^0$

NODE=S086A08

VALUE	DOCUMENT ID		TECN	COMMENT
0.911±0.020±0.165	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions. NODE=S086A08;LINKAGE=A

$\Gamma_\parallel/\Gamma$ in $B_s^0 \to K^*(892)^0\overline{K}_2^*(1430)^0$

NODE=S086A12

VALUE	DOCUMENT ID		TECN	COMMENT
0.012±0.008±0.053	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions. NODE=S086A12;LINKAGE=A

Γ_L/Γ in $B_s^0 \to K_2^*(1430)^0 \overline{K}^*(892)^0$

NODE=S086A09
NODE=S086A09

VALUE	DOCUMENT ID		TECN	COMMENT
0.62±0.16±0.25	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions.

NODE=S086A09;LINKAGE=A

$\Gamma_{\parallel}/\Gamma$ in $B_s^0 \to K_2^*(1430)^0 \overline{K}^*(892)^0$

NODE=S086A13
NODE=S086A13

VALUE	DOCUMENT ID		TECN	COMMENT
0.24±0.10±0.14	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions.

NODE=S086A13;LINKAGE=A

Γ_L/Γ in $B_s^0 \to K_2^*(1430)^0 \overline{K}_2^*(1430)^0$

NODE=S086A10
NODE=S086A10

VALUE	DOCUMENT ID		TECN	COMMENT
0.25±0.14±0.18	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions.

NODE=S086A10;LINKAGE=A

$\Gamma_{\parallel 1}/\Gamma$ in $B_s^0 \to K_2^*(1430)^0 \overline{K}_2^*(1430)^0$

NODE=S086A18
NODE=S086A18

VALUE	DOCUMENT ID		TECN	COMMENT
0.17±0.11±0.14	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions.

NODE=S086A18;LINKAGE=A

$\Gamma_{\perp 1}/\Gamma$ in $B_s^0 \to K_2^*(1430)^0 \overline{K}_2^*(1430)^0$

NODE=S086A19
NODE=S086A19

VALUE	DOCUMENT ID		TECN	COMMENT
0.30±0.18±0.21	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave. contributions.

NODE=S086A19;LINKAGE=A

$\Gamma_{\parallel 2}/\Gamma$ in $B_s^0 \to K_2^*(1430)^0 \overline{K}_2^*(1430)^0$

NODE=S086A20
NODE=S086A20

VALUE	DOCUMENT ID		TECN	COMMENT
0.015±0.033±0.107	[1] AAIJ	18S	LHCB	pp at 7, 8 TeV

[1] Measured in angular analysis, which takes into account S-, P- and D-wave . contributions.

NODE=S086A20;LINKAGE=A

$F_L(B_s^0 \to \phi e^+ e^-)$ $(0.0009 < q^2 < 0.2615\ \mathrm{GeV}^2/c^4)$

NODE=S086A51
NODE=S086A51

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.115	90	AAIJ	25S	LHCB	pp at 7, 8 and 13 TeV

$A_T^{(2)}(B_s^0 \to \phi e^+ e^-)$ $(0.0009 < q^2 < 0.2615\ \mathrm{GeV}^2/c^4)$

NODE=S086A52
NODE=S086A52

VALUE	DOCUMENT ID		TECN	COMMENT
−0.045±0.235±0.014	AAIJ	25S	LHCB	pp at 7, 8 and 13 TeV

$A_T^{ImCP}(B_s^0 \to \phi e^+ e^-)$ $(0.0009 < q^2 < 0.2615\ \mathrm{GeV}^2/c^4)$

NODE=S086A53
NODE=S086A53

VALUE	DOCUMENT ID		TECN	COMMENT
0.002±0.247±0.016	AAIJ	25S	LHCB	pp at 7, 8 and 13 TeV

$A_T^{ReCP}(B_s^0 \to \phi e^+ e^-)$ $(0.0009 < q^2 < 0.2615\ \mathrm{GeV}^2/c^4)$

NODE=S086A54
NODE=S086A54

VALUE	DOCUMENT ID		TECN	COMMENT
0.116±0.155±0.006	AAIJ	25S	LHCB	pp at 7, 8 and 13 TeV

$F_L(B_s^0 \to \phi e^+ e^-)$ $(0.1 < q^2 < 1.1\ \mathrm{GeV}^2/c^4)$

NODE=S086A55
NODE=S086A55

VALUE	DOCUMENT ID		TECN	COMMENT
0.25±0.12±0.06	AAIJ	25AC	LHCB	pp at 7, 8, 13 TeV

$F_L(B_s^0 \to \phi e^+ e^-)$ $(1.1 < q^2 < 6.0\ \mathrm{GeV}^2/c^4)$

NODE=S086A56
NODE=S086A56

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.67^{+0.12}_{-0.13}\pm0.06}$	AAIJ	25AC	LHCB	pp at 7, 8, 13 TeV

$F_L(B_s^0 \to \phi e^+ e^-)$ $(15.0 < q^2 < 19.0\ \mathrm{GeV}^2/c^4)$

NODE=S086A57
NODE=S086A57

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.43^{+0.11}_{-0.10}\pm0.05}$	AAIJ	25AC	LHCB	pp at 7, 8, 13 TeV

$F_L(B_s^0 \to \phi \mu^+ \mu^-)$ $(0.10 < q^2 < 2.00\ \mathrm{GeV}^2/c^4)$

NODE=S086FL1
NODE=S086FL1

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.20^{+0.08}_{-0.09}\pm0.02}$	AAIJ	15AQ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.37^{+0.19}_{-0.17}\pm0.07$	AAIJ	13X	LHCB	Repl. by AAIJ 15AQ

$F_L(B_s^0 \to \phi\mu^+\mu^-)$ $(2.00 < q^2 < 5.0\ GeV^2/c^4)$

NODE=S086FL2
NODE=S086FL2

VALUE	DOCUMENT ID	TECN	COMMENT
$0.68^{+0.16}_{-0.13}\pm0.03$	AAIJ 15AQ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.53^{+0.25}_{-0.23}\pm0.10$	[1] AAIJ 13X	LHCB	Repl. by AAIJ 15AQ

[1] Measured in $2.0 < q^2 < 4.3$ GeV^2/c^4.

NODE=S086FL2;LINKAGE=AA

$F_L(B_s^0 \to \phi\mu^+\mu^-)$ $(5.0 < q^2 < 8.0\ GeV^2/c^4)$

NODE=S086FL3
NODE=S086FL3

VALUE	DOCUMENT ID	TECN	COMMENT
$0.54^{+0.10}_{-0.09}\pm0.02$	AAIJ 15AQ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.81^{+0.11}_{-0.13}\pm0.05$	[1] AAIJ 13X	LHCB	Repl. by AAIJ 15AQ

[1] Measured in $4.3 < q^2 < 8.68$ GeV^2/c^4.

NODE=S086FL3;LINKAGE=AA

$F_L(B_s^0 \to \phi\mu^+\mu^-)$ $(11.0 < q^2 < 12.5\ GeV^2/c^4)$

NODE=S086FL4
NODE=S086FL4

VALUE	DOCUMENT ID	TECN	COMMENT
$0.29\pm0.11\pm0.04$	AAIJ 15AQ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.33^{+0.14}_{-0.12}\pm0.06$	[1] AAIJ 13X	LHCB	Repl. by AAIJ 15AQ

[1] Measured in $10.09 < q^2 < 12.90$ GeV^2/c^4.

NODE=S086FL4;LINKAGE=AA

$F_L(B_s^0 \to \phi\mu^+\mu^-)$ $(15.0 < q^2 < 17.0\ GeV^2/c^4)$

NODE=S086FL5
NODE=S086FL5

VALUE	DOCUMENT ID	TECN	COMMENT
$0.23^{+0.09}_{-0.08}\pm0.02$	AAIJ 15AQ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.34^{+0.18}_{-0.17}\pm0.07$	[1] AAIJ 13X	LHCB	Repl. by AAIJ 15AQ

[1] Measured in $14.18 < q^2 < 16$ GeV^2/c^4.

NODE=S086FL5;LINKAGE=AA

$F_L(B_s^0 \to \phi\mu^+\mu^-)$ $(17.0 < q^2 < 19.0\ GeV^2/c^4)$

NODE=S086FL6
NODE=S086FL6

VALUE	DOCUMENT ID	TECN	COMMENT
$0.40^{+0.13}_{-0.15}\pm0.02$	AAIJ 15AQ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.16^{+0.17}_{-0.10}\pm0.07$	[1] AAIJ 13X	LHCB	Repl. by AAIJ 15AQ

[1] Measured in $16.0 < q^2 < 19.0$ GeV^2/c^4.

NODE=S086FL6;LINKAGE=AA

$F_L(B_s^0 \to \phi\mu^+\mu^-)$ $(15.0 < q^2 < 18.9\ GeV^2/c^4)$

NODE=S086A36
NODE=S086A36

VALUE	DOCUMENT ID	TECN	COMMENT
$0.359\pm0.031\pm0.019$	AAIJ 21AK	LHCB	pp at 7, 8, 13 TeV

$F_L(B_s^0 \to \phi\mu^+\mu^-)$ $(1.00 < q^2 < 6.00\ GeV^2/c^4)$

NODE=S086FL7
NODE=S086FL7

VALUE	DOCUMENT ID	TECN	COMMENT
$0.715\pm0.036\pm0.013$	AAIJ 21AK	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.63\ ^{+0.09}_{-0.09}\ \pm0.03$	AAIJ 15AQ	LHCB	Repl. by AAIJ 21AK
$0.56\ ^{+0.17}_{-0.16}\ \pm0.09$	AAIJ 13X	LHCB	Repl. by AAIJ 15AQ

B_s^0-$\overline{B}_s^0$ MIXING

NODE=S086235

For a discussion of B_s^0-$\overline{B}_s^0$ mixing see the note on "B^0-$\overline{B}^0$ Mixing" in the B^0 Particle Listings above.

NODE=S086235

χ_s is a measure of the time-integrated B_s^0-$\overline{B}_s^0$ mixing probability that produced $B_s^0(\overline{B}_s^0)$ decays as a $\overline{B}_s^0(B_s^0)$. Mixing violates $\Delta B \neq 2$ rule.

$$\chi_s = \frac{x_s^2}{2(1+x_s^2)}$$

$$x_s = \frac{\Delta m_{B_s^0}}{\Gamma_{B_s^0}} = (m_{B^0_{sH}} - m_{B^0_{sL}})\,\tau_{B_s^0}\ ,$$

where H, L stand for heavy and light states of two B_s^0 CP eigenstates and $\tau_{B_s^0} = \frac{1}{0.5(\Gamma_{B^0_{sH}}+\Gamma_{B^0_{sL}})}$.

$\Delta m_{B_s^0} = m_{B^0_{sH}} - m_{B^0_{sL}}$

NODE=S086D

$\Delta m_{B_s^0}$ is a measure of 2π times the B_s^0-$\overline{B}_s^0$ oscillation frequency in time-dependent mixing experiments.

NODE=S086D

NODE=S086D

VALUE (10^{12} $\hbar$ s^{-1})			CL%	DOCUMENT ID		TECN	COMMENT	
17.766	**±0.006**	**OUR EVALUATION**		(Produced by HFLAV)				→ UNCHECKED ←
17.765	**±0.005**	**OUR AVERAGE**						
17.757	±0.040	±0.023		[1] HAYRAPETY...	26A	CMS	$p\,p$ at 13 TeV	
17.743	±0.033	±0.009		[2] AAIJ	24A	LHCB	$p\,p$ at 13 TeV	
17.7683	±0.0051	±0.0032		[3] AAIJ	22B	LHCB	$p\,p$ at 13 TeV	
17.757	±0.007	±0.008		[4] AAIJ	21M	LHCB	$p\,p$ at 7, 8, 13 TeV	
17.768	±0.023	±0.006		[3] AAIJ	13BI	LHCB	$p\,p$ at 7 TeV	
17.93	±0.22	±0.15		[5] AAIJ	13CF	LHCB	$p\,p$ at 7 TeV	
17.77	±0.10	±0.07		[6] ABULENCIA,A	06G	CDF	$p\overline{p}$ at 1.96 TeV	
• • • We do not use the following data for averages, fits, limits, etc. • • •								
17.51	$^{+0.10}_{-0.09}$	±0.03		[7] SIRUNYAN	21E	CMS	Repl. by HAYRAPETYAN 26A	
17.703	±0.059	±0.018		[2] AAIJ	19Q	LHCB	Repl. by AAIJ 24A	
17.711	$^{+0.055}_{-0.057}$	±0.011		[2] AAIJ	15I	LHCB	Repl. by AAIJ 19Q	
17.63	±0.11	±0.02		[8] AAIJ	12I	LHCB	Repl. by AAIJ 21M	
17–21			90	[9] ABAZOV	06B	D0	$p\overline{p}$ at 1.96 TeV	
17.31	$^{+0.33}_{-0.18}$	±0.07		[10] ABULENCIA	06Q	CDF	Repl. by ABULENCIA,A 06G	
> 8.0			95	[11] ABDALLAH	04J	DLPH	$e^+e^- \rightarrow Z^0$	
> 4.9			95	[12] ABDALLAH	04J	DLPH	$e^+e^- \rightarrow Z^0$	OCCUR=2
> 8.5			95	[13] ABDALLAH	04J	DLPH	$e^+e^- \rightarrow Z^0$	OCCUR=3
> 5.0			95	[14] ABDALLAH	03B	DLPH	$e^+e^- \rightarrow Z$	
>10.3			95	[15] ABE	03	SLD	$e^+e^- \rightarrow Z$	
>10.9			95	[16] HEISTER	03E	ALEP	$e^+e^- \rightarrow Z$	
> 5.3			95	[17] ABE	02V	SLD	$e^+e^- \rightarrow Z$	
> 1.0			95	[18] ABBIENDI	01D	OPAL	$e^+e^- \rightarrow Z$	
> 7.4			95	[19] ABREU	00Y	DLPH	Repl. by ABDALLAH 04J	
> 4.0			95	[20] ABREU,P	00G	DLPH	$e^+e^- \rightarrow Z$	
> 5.2			95	[21] ABBIENDI	99S	OPAL	$e^+e^- \rightarrow Z$	
<96			95	[22] ABE	99D	CDF	$p\overline{p}$ at 1.8 TeV	
> 5.8			95	[23] ABE	99J	CDF	$p\overline{p}$ at 1.8 TeV	
> 9.6			95	[24] BARATE	99J	ALEP	$e^+e^- \rightarrow Z$	
> 7.9			95	[25] BARATE	98C	ALEP	Repl. by BARATE 99J	OCCUR=2
> 3.1			95	[26] ACKERSTAFF	97U	OPAL	Repl. by ABBIENDI 99S	OCCUR=2
> 2.2			95	[27] ACKERSTAFF	97V	OPAL	Repl. by ABBIENDI 99S	OCCUR=2
> 6.5			95	[28] ADAM	97	DLPH	Repl. by ABREU 00Y	OCCUR=2
> 6.6			95	[29] BUSKULIC	96M	ALEP	Repl. by BARATE 98C	
> 2.2			95	[27] AKERS	95J	OPAL	Sup. by ACKERSTAFF 97V	
> 5.7			95	[30] BUSKULIC	95J	ALEP	$e^+e^- \rightarrow Z$	OCCUR=2
> 1.8			95	[27] BUSKULIC	94B	ALEP	$e^+e^- \rightarrow Z$	

[1] Measured using a time-dependent angular analysis of $B_s^0 \rightarrow J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm. NODE=S086D;LINKAGE=F

[2] Measured using time-dependent angular analysis of $B_s^0 \rightarrow J/\psi K^+ K^-$ decays. NODE=S086D;LINKAGE=B

[3] Measured using $B_s^0 \rightarrow D_s^- \pi^+$ decays. NODE=S086D;LINKAGE=AJ

[4] Measured using $B_s^0 \rightarrow D_s^- \pi^+ \pi^- \pi^+$ decays. NODE=S086D;LINKAGE=E

[5] Measured using $B_s^0 \rightarrow D_s^- \mu^+ \nu_\mu X$ decays. NODE=S086D;LINKAGE=A

[6] Significance of oscillation signal is 5.4 σ. Also reports $|V_{td}\ /\ V_{ts}| = 0.2060 \pm 0.0007^{+0.0081}_{-0.0060}$. NODE=S086D;LINKAGE=AL

[7] Measured using time-dependent angular analysis of $B_s^0 \rightarrow J/\psi\phi$ decays. NODE=S086D;LINKAGE=D

[8] Measured using $B_s^0 \rightarrow D_s^- \pi^+$ and $D_s^- \pi^+ \pi^- \pi^+$ decays. NODE=S086D;LINKAGE=AI

[9] A likelihood scan over the oscillation frequency, Δm_s, gives a most probable value of 19 ps^{-1} and a range of 17< Δm_s <21 (ps^{-1}) at 90% C.L. assuming Gaussian uncertainties. Also excludes Δm_s <14.8 ps^{-1} at 95% C.L — NODE=S086D;LINKAGE=AZ

[10] Significance of oscillation signal is 0.2%. Also reported the value $|V_{td}\ /\ V_{ts}|$ = $0.208^{+0.001}_{-0.002}{}^{+0.008}_{-0.006}$. — NODE=S086D;LINKAGE=AC

[11] Uses leptons emitted with large momentum transverse to a jet and improved techniques for vertexing and flavor-tagging. — NODE=S086D;LINKAGE=AB

[12] Updates of D_s-lepton analysis. — NODE=S086D;LINKAGE=AD

[13] Combined results from all Delphi analyses. — NODE=S086D;LINKAGE=AA

[14] Events with a high transverse momentum lepton were removed and an inclusively reconstructed vertex was required. — NODE=S086D;LINKAGE=BL

[15] ABE 03 uses the novel "charge dipole" technique to reconstruct separate secondary and tertiary vertices originating from the $B \rightarrow D$ decay chain. The analysis excludes Δm_s <4.9 ps^{-1} and 7.9< Δm_s <10.3 ps^{-1}. — NODE=S086D;LINKAGE=D3

[16] Three analyses based on complementary event selections: (1) fully-reconstructed hadronic decays; (2) semileptonic decays with D_s exclusively reconstructed; (3) inclusive semileptonic decays. — NODE=S086D;LINKAGE=AN

[17] ABE 02V uses exclusively reconstructed D_s^- mesons and excludes Δm_s <1.4 ps^{-1} and 2.4< Δm_s <5.3 ps^{-1} at 95%CL. — NODE=S086D;LINKAGE=AV

[18] Uses fully or partially reconstructed $D_s \ell$ vertices and a mixing tag as a flavor tagging. — NODE=S086D;LINKAGE=D9

[19] Replaced by ABDALLAH 04A. Uses $D_s^- \ell^+$, and $\phi \ell^+$ vertices, and a multi-variable discriminant as a flavor tagging. — NODE=S086D;LINKAGE=LZ

[20] Uses inclusive D_s vertices and fully reconstructed B_s decays and a multi-variable discriminant as a flavor tagging. — NODE=S086D;LINKAGE=H

[21] Uses ℓ-Q_{hem} and ℓ-ℓ. — NODE=S086D;LINKAGE=A3

[22] ABE 99D assumes $\tau_{B_s^0}$= 1.55 ± 0.05 ps and $\Delta\Gamma/\Delta m$= (5.6 ± 2.6) × 10^{-3}. — NODE=S086D;LINKAGE=N2

[23] ABE 99J uses ϕ ℓ-ℓ correlation. — NODE=S086D;LINKAGE=PH

[24] BARATE 99J uses combination of an inclusive lepton and D_s^--based analyses. — NODE=S086D;LINKAGE=JB

[25] BARATE 98C combines results from $D_s h$-ℓ/Q_{hem}, $D_s h$-K in the same side, $D_s \ell$-ℓ/Q_{hem} and $D_s \ell$-K in the same side. — NODE=S086D;LINKAGE=C2

[26] Uses ℓ-Q_{hem}. — NODE=S086D;LINKAGE=A2

[27] Uses ℓ-ℓ. — NODE=S086D;LINKAGE=A1

[28] ADAM 97 combines results from $D_s \ell$-Q_{hem}, ℓ-Q_{hem}, and ℓ-ℓ. — NODE=S086D;LINKAGE=C3

[29] BUSKULIC 96M uses D_s lepton correlations and lepton, kaon, and jet charge tags. — NODE=S086D;LINKAGE=C

[30] BUSKULIC 95J uses ℓ-Q_{hem}. They find Δm_s > 5.6 [> 6.1] for f_s=10% [12%]. We interpolate to our central value f_s=10.5%. — NODE=S086D;LINKAGE=M2

$x_s = \Delta m_{B_s^0}/\Gamma_{B_s^0}$

NODE=S086DG

Derived from the results on $\Delta m_{B_s^0}$ and "OUR EVALUATION" of the B_s^0 mean lifetime.

NODE=S086DG

VALUE	*DOCUMENT ID*
26.91±0.11 OUR EVALUATION	(Produced by HFLAV)

NODE=S086DG
→ UNCHECKED ←

χ_s

NODE=S086CHS

This is a B_s^0-$\overline{B}_s^0$ integrated mixing parameter derived from x_s above and OUR EVALUATION of $\Delta\Gamma_{B_s^0}/\Gamma_{B_s^0}$.

NODE=S086CHS

VALUE	*DOCUMENT ID*
0.499313±0.000006 OUR EVALUATION	(Produced by HFLAV)

NODE=S086CHS
→ UNCHECKED ←

CP VIOLATION PARAMETERS in B_s^0

NODE=S086240

Re($\epsilon_{B_s^0}$) / (1 + $|\epsilon_{B_s^0}|^2$)

NODE=S086EPS

CP impurity in B_s^0 system.

NODE=S086EPS

"OUR EVALUATION" is the result of a fit to B_d and B_s *CP* asymmetries, which includes the B_s measurements listed below and the B_d measurements listed in the B_d section, and takes into account correlations between those measurements.

NODE=S086EPS

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
−0.15±0.70 OUR EVALUATION	(Produced by HFLAV)			
0.0 ±1.1 OUR AVERAGE	Error includes scale factor of 1.6. See the ideogram below.			
0.98±0.65±0.5	[1] AAIJ	16G	LHCB	pp at 7, 8 TeV
−2.15±1.85	[2] ABAZOV	14	D0	$p\overline{p}$ at 1.96 TeV
−2.8 ±1.9 ±0.4	[3] ABAZOV	13	D0	$p\overline{p}$ at 1.96 TeV

→ UNCHECKED ←

• • • We do not use the following data for averages, fits, limits, etc. • • •

$-0.15\pm1.25\pm0.90$	[4] AAIJ	14D	LHCB	Repl. by AAIJ 16G
$-4.5\ \pm2.7$	[5] ABAZOV	11U	D0	Repl. by ABAZOV 14
$-0.4\ \pm2.3\ \pm0.4$	[6] ABAZOV	10E	D0	Repl. by ABAZOV 13
$-3.6\ \pm1.9$	[7] ABAZOV	10H	D0	Repl. by ABAZOV 11U
$6.1\ \pm4.8\ \pm0.9$	[8] ABAZOV	07A	D0	Repl. by ABAZOV 10E

[1] AAIJ 16G reports a measurement of time-integrated flavor-specific asymmetry in $B^0_s \rightarrow \mu^+ D^-_s X$ decays, $A^s_{SL} = (0.39 \pm 0.26 \pm 0.20)\%$, which is approximately equal to 4 $\times$ Re($\epsilon_{B^0_s}$) / (1 + $|\epsilon_{B^0_s}|^2$). NODE=S086EPS;LINKAGE=B

[2] ABAZOV 14 uses the dimuon charge asymmetry with different impact parameters from which it reports $A^s_{SL} = (-0.86 \pm 0.74) \times 10^{-2}$. NODE=S086EPS;LINKAGE=A

[3] ABAZOV 13 reports a measurement of time-integrated flavor-specific asymmetry in mixed semileptonic $B^0_s \rightarrow \mu^+ D^-_s X$ decays $A^s_{SL} = (-1.12 \pm 0.74 \pm 0.17)\%$ which is approximately equal to 4 $\times$ Re($\epsilon_{B^0_s}$) / (1 + $|\epsilon_{B^0_s}|^2$). NODE=S086EPS;LINKAGE=AV

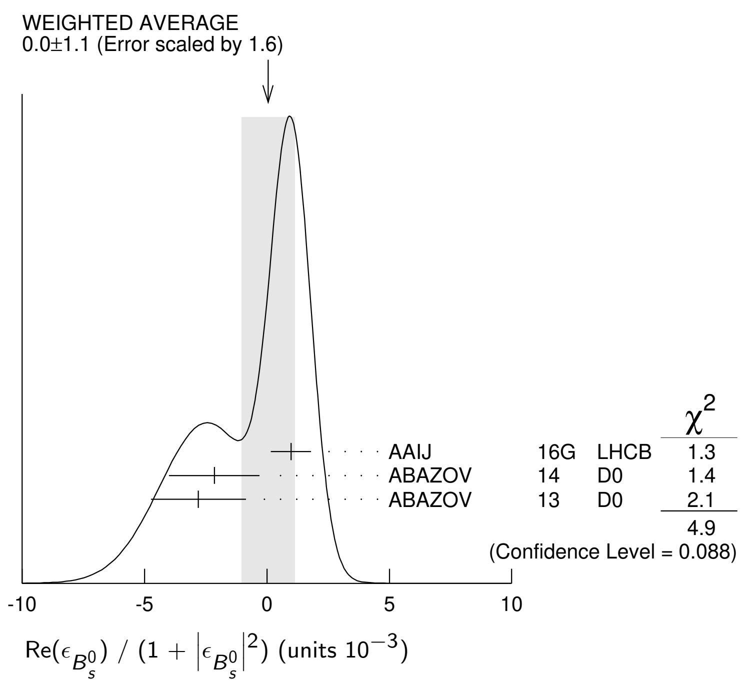
[4] AAIJ 14D reports a measurement of time-integrated flavor-specific asymmetry in $B^0_s \rightarrow \mu^+ D^-_s X$ decays, $A^s_{SL} = (-0.06 \pm 0.50 \pm 0.36)\%$, which is approximately equal to4 $\times$ Re($\epsilon_{B^0_s}$) / (1 + $|\epsilon_{B^0_s}|^2$). NODE=S086EPS;LINKAGE=AI

[5] ABAZOV 11U uses the dimuon charge asymmetry with different impact parameters from which it reports $A^s_{SL} = (-18.1 \pm 10.6) \times 10^{-3}$. NODE=S086EPS;LINKAGE=AO

[6] ABAZOV 10E reports a measurement of flavor-specific asymmetry in $B^0_{(s)} \rightarrow \mu^+ D^{*-}_{(s)} X$ decays with a decay-time analysis including initial-state flavor tagging, $A^s_{SL} = (-1.7 \pm 9.1^{+1.4}_{-1.5}) \times 10^{-3}$ which is approximately equal to 4 $\times$ Re($\epsilon_{B^0_s}$) / (1 + $|\epsilon_{B^0_s}|^2$). NODE=S086EPS;LINKAGE=AA

[7] ABAZOV 10H reports a measurement of like-sign dimuon charge asymmetry of $A^s_{SL} = (-9.57 \pm 2.51 \pm 1.46) \times 10^{-3}$ in semileptonic b-hadron decays. Using the measured production ratio of B^0_d and B^0_0, and the asymmetry of B^0_d $A^s_{SL} = (-4.7 \pm 4.6) \times 10^{-3}$ measured from B-factories, they obtain the asymmetry for B^0_s. NODE=S086EPS;LINKAGE=AZ

[8] The first direct measurement of the time integrated flavor untagged charge asymmetry in semileptonic B^0_s decays is reported as $2 \times A^s_{SL}$(untagged) = $A^s_{SL} = (2.45 \pm 1.93 \pm 0.35) \times 10^{-2}$. NODE=S086EPS;LINKAGE=AB



$C_{KK}(B^0_s \rightarrow K^+ K^-)$

NODE=S086CK1
NODE=S086CK1

VALUE	DOCUMENT ID		TECN	COMMENT
0.162±0.035 OUR AVERAGE				
$0.164\pm0.034\pm0.014$	AAIJ	21O	LHCB	pp at 13 TeV
$0.14\ \pm0.11\ \pm0.03$	AAIJ	13BO	LHCB	pp at 7 TeV

$S_{KK}(B_s^0 \to K^+K^-)$

NODE=S086SK1
NODE=S086SK1

VALUE	DOCUMENT ID		TECN	COMMENT
0.14 ±0.05 OUR AVERAGE	Error includes scale factor of 1.3.			
0.123±0.034±0.015	AAIJ	21O	LHCB	pp at 13 TeV
0.30 ±0.12 ±0.04	AAIJ	13BO	LHCB	pp at 7 TeV

$r_B(B_s^0 \to D_s^\mp K^\pm)$

NODE=S086ARX

r_B and δ_B are the amplitude ratio and relative strong phase between the amplitudes of $A(B_s^0 \to D_s^+ K^-)$ and $A(B_s^0 \to D_s^- K^+)$,

NODE=S086ARX

NODE=S086ARX

VALUE	DOCUMENT ID		TECN	COMMENT
0.318±0.034 OUR AVERAGE	[$0.37^{+0.10}_{-0.09}$ OUR 2025 AVERAGE]			
$\mathbf{0.318^{+0.034}_{-0.033}}$	[1,2] AAIJ	25T	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.327^{+0.039}_{-0.037}$	[1] AAIJ	25T	LHCB	$p\,p$ at 13 TeV
$0.37^{+0.10}_{-0.09}$	[3] AAIJ	18U	LHCB	pp at 7, 8 TeV
$0.53^{+0.17}_{-0.16}$	[4] AAIJ	14BF	LHCB	Repl. by AAIJ 18U

NEW
OCCUR=2

[1] Measured in $B_s^0 \to D_s^\mp K^\pm$ decays, constraining $-2\beta_s$ by the measurement of $\phi_s = -0.031 \pm 0.018$ rad. The value is modulo 180°. NODE=S086ARX;LINKAGE=C

[2] Combines the result with that of AAIJ 18U, for which the values of the nuisance parameters Δm_s, Γ_s and $\Delta\Gamma_s$ have been re-evaluated and the related systematic uncertainties updated. NODE=S086ARX;LINKAGE=D

[3] Measured in $B_s^0 \to D_s^\mp K^\pm$ decays, constraining $-2\beta_s$ by the measurement of $\phi_s = -0.030 \pm 0.033$ from HFLAV. NODE=S086ARX;LINKAGE=B

[4] Measured in $B_s^0 \to D_s^\mp K^\pm$ decays, constraining $-2\beta_s$ by the measurement of $\phi_s = 0.01 \pm 0.07 \pm 0.0$ from AAIJ 13AR. At 68% CL. NODE=S086ARX;LINKAGE=A

$r_B(B_s^0 \to D_s^\mp K^\pm \pi^\pm \pi^\mp)$

NODE=S086A28
NODE=S086A28

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.47{\pm}0.08^{+0.02}_{-0.03}}$	[1,2] AAIJ	21M	LHCB	pp at 7, 8, 13 TeV

[1] Measured in restricted phase space with m($K^+\pi^+\pi^-$) < 1950 MeV, m($K^+\pi^-$) < 1200 MeV and m($\pi^+\pi^-$) < 1200 MeV. NODE=S086A28;LINKAGE=A

[2] A model-independent coherence factor for the decay $B_s \to D_s K \pi\pi$ (in the restricted phase space region) is also reported. NODE=S086A28;LINKAGE=B

$\delta_B(B_s^0 \to D_s^\pm K^\mp)$

NODE=S086DRX
NODE=S086DRX

VALUE (°)	DOCUMENT ID		TECN	COMMENT
348 ± 6 OUR AVERAGE	[(358 ± 14)° OUR 2025 AVERAGE]			
347.6± 6.3	[1,2] AAIJ	25T	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$346.9^{+6.8}_{-6.6}$	[1] AAIJ	25T	LHCB	$p\,p$ at 13 TeV
358^{+13}_{-14}	[3] AAIJ	18U	LHCB	pp at 7, 8 TeV
3^{+19}_{-20}	[4] AAIJ	14BF	LHCB	Repl. by AAIJ 18U

NEW
OCCUR=2

[1] Measured in $B_s^0 \to D_s^\mp K^\pm$ decays, constraining $-2\beta_s$ by the measurement of $\phi_s = -0.031 \pm 0.018$ rad. The value is modulo 180°. NODE=S086DRX;LINKAGE=D

[2] Combines the result with that of AAIJ 18U, for which the values of the nuisance parameters Δm_s, Γ_s and $\Delta\Gamma_s$ have been re-evaluated and the related systematic uncertainties updated. NODE=S086DRX;LINKAGE=E

[3] Measured in $B_s^0 \to D_s^\mp K^\pm$ decays, constraining $-2\beta_s$ by the measurement of $\phi_s = 0.030 \pm 0.033$ from HFLAV. The value is modulo 180°. NODE=S086DRX;LINKAGE=C

[4] Measured in $B_s^0 \to D_s^\mp K^\pm$ decays, constraining $-2\beta_s$ by the measurement of $\phi_s = 0.01 \pm 0.07 \pm 0.0$ from AAIJ 13AR. The value is modulo 180° at 68% CL. NODE=S086DRX;LINKAGE=A

$\delta_B(B_s^0 \to D_s^\pm K^\mp \pi^\pm \pi^\mp)$

NODE=S086A29
NODE=S086A29

VALUE (°)	DOCUMENT ID		TECN	COMMENT
$\mathbf{-6^{+10}_{-12}{}^{+2}_{-4}}$	[1,2] AAIJ	21M	LHCB	pp at 7, 8, 13 TeV

[1] Measured in restricted phase space with m($K^+\pi^+\pi^-$) < 1950 MeV, m($K^+\pi^-$) < 1200 MeV and m($\pi^+\pi^-$) < 1200 MeV. The value is modulo 180°. NODE=S086A29;LINKAGE=A

[2] A model-independent coherence factor for the decay $B_s \to D_s K \pi\pi$ (in the restricted phase space region) is also reported. NODE=S086A29;LINKAGE=B

CP Violation phase β_s ($b \to c\overline{c}s$)

NODE=S086PHS

$-2\beta_s$ is the weak phase difference between B^0_s mixing amplitude and the $B^0_s \to J/\psi\phi$ decay amplitude driven by the $b \to c\overline{c}s$ transition (such as $B_s \to J/\psi\phi$, $J/\psi K^+ K^-$, $J/\psi\pi^+\pi^-$, and $D^+_s D^-_s$). The Standard Model value of β_s is arg($-\frac{V_{ts}V^*_{tb}}{V_{cs}V^*_{cb}}$) if penguin contributions are neglected.

NODE=S086PHS

NODE=S086PHS

VALUE (10^{-2} rad)	*DOCUMENT ID*		*TECN*	*COMMENT*
2.7 ± 0.7 OUR EVALUATION (Produced by HFLAV)				
2.5 ± 0.7 OUR AVERAGE				
[(1.9 ± 0.8) × 10^{-2} rad OUR 2025 AVERAGE]				
3.65 ± 1.10 ± 0.50	[1,2] HAYRAPETY...	26A	CMS	pp at 13 TeV
4.3 ± 5.3 ± 1.4	[3] AAIJ	25A	LHCB	pp at 13 TeV
1.9 ± 1.1 ± 0.3	[4] AAIJ	24A	LHCB	pp at 13 TeV
4.05 ± 2.05 ± 1.10	[5,6] AAD	21AE	ATLS	pp at 13 TeV
0 ± 14 ± 4	[7] AAIJ	21AN	LHCB	pp at 7, 8 TeV
2.85 ± 3.00 ± 0.55	[8,9] AAIJ	19AF	LHCB	pp at 13 TeV
− 5.95 ± 5.35 ± 1.70	[10] AAIJ	17V	LHCB	pp at 7, 8 TeV
5.05 ± 4.10 ± 2.10	[11,12] AAD	16AP	ATLS	pp at 8 TeV
$-11.5\ ^{+14}_{-14.5} \pm 1$	[13] AAIJ	16AK	LHCB	pp at 7, 8 TeV
3.75 ± 4.85 ± 1.55	[14] KHACHATRY...	16S	CMS	pp at 8 TeV
2.9 ± 2.5 ± 0.3	[15] AAIJ	15I	LHCB	pp at 7, 8 TeV
− 6 ± 13 ± 3	[16] AAD	14U	ATLS	pp at 7 TeV
− 1 ± 9 ± 1	[17] AAIJ	14AY	LHCB	pp at 7, 8 TeV
− 3.5 ± 3.4 ± 0.4	[18] AAIJ	14S	LHCB	pp at 7, 8 TeV
	[19] AALTONEN	12AJ	CDF	$p\overline{p}$ at 1.96 TeV
$28\ ^{+18}_{-19}$	[20] ABAZOV	12D	D0	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.5 ± 2.5 ± 0.5	[21,22] SIRUNYAN	21E	CMS	Repl. by HAYRAPETYAN 26A
4.15 ± 2.05 ± 0.30	[23] AAIJ	19Q	LHCB	Repl. by AAIJ 24A
5.0 ± 6.5 ± 7.0	[24] AAIJ	18S	LHCB	pp at 7, 8 TeV
$6\ ^{+8}_{-7}$	[25,26] AAIJ	15K	LHCB	pp at 7, 8 TeV
− 0.5 ± 3.5 ± 0.5	[27] AAIJ	13AR	LHCB	Repl. by AAIJ 15I
−11.0 ± 20.5 ± 5.0	[28] AAD	12CV	ATLS	Repl. by AAD 14U
22 ± 22 ± 1	[29] AAIJ	12B	LHCB	Repl. by AAIJ 12Q
− 8 ± 9 ± 3	[30] AAIJ	12D	LHCB	Repl. by AAIJ 13AR
$0.95\ ^{+8.70}_{-8.65}\ ^{+0.15}_{-0.20}$	[31] AAIJ	12Q	LHCB	Repl. by AAIJ 13AR
	[32] AALTONEN	12D	CDF	Repl. by AALTONEN 12AJ
	[33] AALTONEN	08G	CDF	Repl. by AALTONEN 12D
$28\ ^{+12}_{-15}\ ^{+4}_{-1}$	[20,34] ABAZOV	08AM	D0	Repl. by ABAZOV 12D
$39.5 \pm 28.0\ ^{+0.5}_{-7.0}$	[35,36] ABAZOV	07	D0	Repl. by ABAZOV 07N
$35\ ^{+20}_{-24}$	[36,37] ABAZOV	07N	D0	Repl. by ABAZOV 08AM

→ UNCHECKED ←
NEW

OCCUR=3

OCCUR=2

[1] HAYRAPETYAN 26A measured $\phi_s = -2\,\beta_s = (-7.3 \pm 2.2 \pm 1.0) \times 10^{-2}$ rad. using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm.

NODE=S086PHS;LINKAGE=GA

[2] Reports a combination of $\beta_s = (3.70 \pm 1.15) \times 10^{-2}$ rad with KHACHATRYAN 16S.

NODE=S086PHS;LINKAGE=HA

[3] AAIJ 25A reports $\phi_s = -2\,\beta_s = -0.086 \pm 0.106 \pm 0.028$ rad. in a time-dependent fit to $B^0_s \to D^+_s D^-_s$, while allowing *CP* violation in decay.

NODE=S086PHS;LINKAGE=FA

[4] AAIJ 19Q reports $\phi_s = -2\,\beta_s = -0.039 \pm 0.022 \pm 0.006$ rad. measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays.

NODE=S086PHS;LINKAGE=Z

[5] Reports a combination of $0.0435 \pm 0.0180 \pm 0.0105$ with AAD 16AP.

NODE=S086PHS;LINKAGE=BA

[6] AAD 21AE measured $\phi_s = -2\,\beta_s = -0.087 \pm 0.036 \pm 0.021$ rad. using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays.

NODE=S086PHS;LINKAGE=T

[7] AAIJ 21AN measured $\phi_s = -2\beta_s = 0.00 \pm 0.28 \pm 0.07$ rad, using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with $J/\psi \to e^+ e^-$.

NODE=S086PHS;LINKAGE=V

[8] Reports a combination of $-0.001 \pm 0.022 \pm 0.006$ with AAIJ 14S.

NODE=S086PHS;LINKAGE=EA

[9] AAIJ 19AF reports $\phi_s = -2\,\beta_s = 0.002 \pm 0.044 \pm 0.012$ rad. and $|\lambda| = 0.949 \pm 0.036 \pm 0.019$, when direct *CP* violation is allowed. Measured using a time-dependent fit to $B^0_s \to J/\psi\pi^+\pi^-$ decays.

NODE=S086PHS;LINKAGE=N

[10] Measured $\phi_s = -2\,\beta_s = 0.119 \pm 0.107 \pm 0.034$ rad using time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ in the region m(KK) > 1.05 GeV.

NODE=S086PHS;LINKAGE=L

[11] Reports a combination of $0.0435 \pm 0.0180 \pm 0.0105$ with AAD 14U. NODE=S086PHS;LINKAGE=CA

[12] AAD 16AP reports $\phi_s = -2\ \beta_s = -0.090 \pm 0.078 \pm 0.041$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=J

[13] AAIJ 16AK reports $\phi_s = -2\ \beta_s = 0.23^{+0.29}_{-0.28} \pm 0.02$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to \psi(2S)\phi$ decays. NODE=S086PHS;LINKAGE=K

[14] KHACHATRYAN 16S reports $\phi_s = -2\ \beta_s = -0.075 \pm 0.097 \pm 0.031$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=I

[15] AAIJ 15I reports $\phi_s = -2\ \beta_s = -0.058 \pm 0.049 \pm 0.006$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays. It also combines this result with that of AAIJ 14S and quotes $\phi_s = -2\ \beta_s = -0.010 \pm 0.039$ rad. NODE=S086PHS;LINKAGE=H

[16] AAD 14U reports $\phi_s = -2\ \beta_s = 0.12 \pm 0.25 \pm 0.05$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=B

[17] AAIJ 14AY reports $\phi_s = -2\ \beta_s = 0.02 \pm 0.17 \pm 0.02$ rad. in a time-dependent fit to $B^0_s \to D^+_s D^-_s$, while allowing CP violation in decay. NODE=S086PHS;LINKAGE=G

[18] AAIJ 14S reports $\phi_s = -2\ \beta_s = 0.070 \pm 0.068 \pm 0.008$ rad. and $|\lambda| = 0.89 \pm 0.05 \pm 0.01$, when direct CP violation is allowed. Measured using a time-dependent fit to $B^0_s \to J/\psi\pi^+\pi^-$ decays. NODE=S086PHS;LINKAGE=D

[19] AALTONEN 12AJ reports $-\pi/2 < \beta_s < -1.51$ or $-0.06 < \beta_s < 0.30$, or $1.26 < \beta_s < \pi/2$ rad. at 68% CL. Measured using the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=AL

[20] ABAZOV 12D reports $\phi_s = -2\ \beta_s = -0.55^{+0.38}_{-0.36}$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. A single error includes both statistical and systematic uncertainties. NODE=S086PHS;LINKAGE=OV

[21] Reports a combination of $0.0105 \pm 0.0220 \pm 0.0050$ with KHACHATRYAN 16S. NODE=S086PHS;LINKAGE=DA

[22] SIRUNYAN 21E measured $\phi_s = -2\ \beta_s = -0.021 \pm 0.044 \pm 0.010$ rad. using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=U

[23] AAIJ 19Q reports $\phi_s = -2\ \beta_s = -0.083 \pm 0.041 \pm 0.006$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays. NODE=S086PHS;LINKAGE=O

[24] AAIJ 18S reports $\phi_s = -2\ \beta_s = -0.10 \pm 0.13 \pm 0.14$ rad measured in $B^0_s \to (K^+\pi^-)(K^-\pi^+)$ in the region $0.75 < \mathrm{m}(K^\pm\pi^\mp) < 1.6$ GeV. This is a $b \to d\overline{d}s$ transition with a decay amplitude phase different from that of $b \to c\overline{c}s$ transition. NODE=S086PHS;LINKAGE=M

[25] AAIJ 15K reports $-2\beta_s = -0.12^{+0.14}_{-0.16}$ rad. The value was obtained by measuring time-dependent CP asymmetry in $B^0_s \to K^+K^-$ and using a U-spin relation between $B^0_s \to K^+K^-$ and $B^0 \to \pi^+\pi^-$. NODE=S086PHS;LINKAGE=F

[26] Results are also presented using additional inputs on $B^0 \to \pi^0\pi^0$ and $B^+ \to \pi^+\pi^0$ decays from other experiments and isospin symmetry assumptions. The dependence of the results on the maximum allowed amount of U-spin breaking up to 50% is also included. NODE=S086PHS;LINKAGE=GB

[27] AAIJ 13AR reports $\phi_s = -2\beta_s = 0.01 \pm 0.07 \pm 0.01$ rad. obtained from combined fit to $B^0_s \to J/\psi K^+K^-$ and $B^0_s \to J/\psi\pi^+\pi^-$ data sets. Also reports separate results of $\phi_s = 0.07 \pm 0.09 \pm 0.01$ rad. from $B^0_s \to J/\psi K^+K^-$ decays and $\phi_s = -0.14^{+0.17}_{-0.16} \pm 0.01$ rad. from $B^0_s \to J/\psi\pi^+\pi^-$ decays. NODE=S086PHS;LINKAGE=AR

[28] AAD 12CV reports $\phi_s = -2\ \beta_s = 0.22 \pm 0.41 \pm 0.10$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=AD

[29] Reports $\phi_s = -2\ \beta_s = -0.44 \pm 0.44 \pm 0.02$ rad. that was measured using a time-dependent fit to $B^0_s \to J/\psi f_0(980)$ decays. NODE=S086PHS;LINKAGE=AI

[30] Reports $\phi_s = -2\ \beta_s = 0.15 \pm 0.18 \pm 0.06$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=AJ

[31] Reports $\phi_s = -2\ \beta_s = -0.019^{+0.173}_{-0.174}{}^{+0.004}_{-0.003}$ rad. which was measured using a time-dependent fit to $B^0_s \to J/\psi\pi^+\pi^-$ decays, with the $\pi^+\pi^-$ mass within 775–1550 MeV. Searches for, but finds no evidence, for direct CP violation in $B^0_s \to J/\psi\pi\pi$ decays. NODE=S086PHS;LINKAGE=IA

[32] Reports $0.02 < \phi_s < 0.52$ or $1.08 < \phi_s < 1.55$ rad. at 68% C.L. confidence regions in the two-dimensional space of ϕ_s and $\Delta\Gamma_{B^0_s}$ from $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=AT

[33] Reports $0.32 < 2\beta_s < 2.82$ rad. at 68% C.L. and confidence regions in the two-dimensional space of $2\beta_s$ and $\Delta\Gamma$ from the first measurement of $B^0_s \to J/\psi\phi$ decays using flavor tagging. The probability of a deviation from SM prediction as large as the level of observed data is 15%. NODE=S086PHS;LINKAGE=AA

[34] Reports $\phi_s = -2\ \beta_s$ and obtains 90% CL interval $-0.03 < \beta_s < 0.60$ rad. NODE=S086PHS;LINKAGE=ZV

[35] The first direct measurement of the CP-violating mixing phase is reported from the time-dependent analysis of flavor untagged $B^0_s \to J/\psi\phi$ decays. NODE=S086PHS;LINKAGE=AZ

[36] Reports ϕ_s which equals to $-2\beta_s$. NODE=S086PHS;LINKAGE=RP

[37] Combines D0 collaboration measurements of time-dependent angular distributions in $B^0_s \rightarrow J/\psi\phi$ and charge asymmetry in semileptonic decays. There is a 4-fold ambiguity in the solution. NODE=S086PHS;LINKAGE=ZO

CP Violation phase β_s ($b \rightarrow s\bar{s}s$)

NODE=S086PBS
NODE=S086PBS

VALUE (10^{-2} rad)	DOCUMENT ID	TECN	COMMENT
3.7 ±3.5	[1,2] AAIJ 23AT	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
2.1 ±3.8±0.5	[3] AAIJ 23AT	LHCB	pp at 13 TeV
3.7 ±5.8±1.4	[4,5] AAIJ 19AP	LHCB	Repl. by AAIJ 23AT
8.5 ±7.5±1.5	[6] AAIJ 14AE	LHCB	Repl. by AAIJ 19AP
0.38 to 1.23	[7] AAIJ 13AY	LHCB	Repl. by AAIJ 14AE

OCCUR=2

[1] AAIJ 23AT reports $\phi_s^{s\bar{s}s} = -0.074 \pm 0.069$ rad and $|\lambda| = 1.009 \pm 0.030$. Measured using a time-dependent fit to $B^0_s \rightarrow \phi\phi$ decays, assuming independence of the helicity of the $\phi\phi$ decay. NODE=S086PBS;LINKAGE=W

[2] AAIJ 23AT also reports polarisation-dependent results assuming that the longitudinal weak phase is *CP*-conserving and that there is no direct *CP* violation. NODE=S086PBS;LINKAGE=X

[3] Measured using a time-dependent fit to $B^0_s \rightarrow \phi\phi$ decays, assuming independence of the helicity of the $\phi\phi$ decay. NODE=S086PBS;LINKAGE=Y

[4] AAIJ 19AP reports $\phi_s^{s\bar{s}s} = -0.073 \pm 0.115 \pm 0.027$ rad and $|\lambda| = 0.99 \pm 0.05 \pm 0.01$. Measured using a time-dependent fit to $B^0_s \rightarrow \phi\phi$ decays, assuming independence of the helicity of the $\phi\phi$ decay. NODE=S086PBS;LINKAGE=P

[5] AAIJ 19AP reports also polarisation-dependent results assuming that the longitudinal weak phase is *CP*-conserving and that there is no direct *CP* violation, giving $\phi_{s,\parallel}^{s\bar{s}s} = 0.014 \pm 0.055 \pm 0.011$ rad and $\phi_{s,\perp}^{s\bar{s}s} = 0.044 \pm 0.059 \pm 0.019$ rad. NODE=S086PBS;LINKAGE=R

[6] AAIJ 14AE value measured in $B^0_s \rightarrow \phi\phi$ decays. Also reports $\phi_s^{s\bar{s}s} = -0.17 \pm 0.15 \pm 0.03$ rad. NODE=S086PBS;LINKAGE=JA

[7] AAIJ 13AY uses $B^0_s \rightarrow \phi\phi$ mode, and reports the 68% CL interval of $\phi_s^{s\bar{s}s} = -2\,\beta_s^{s\bar{s}s}$ as $[-2.46, -0.76]$ rad. NODE=S086PBS;LINKAGE=A

CP Violation phase β_s ($B^0_s \rightarrow J/\psi(1S)\phi$)

NODE=S086PJS
NODE=S086PJS

VALUE (10^{-2} rad)	DOCUMENT ID	TECN	COMMENT
3.0 ± 0.7 OUR EVALUATION (Produced by HFLAV)			
3.0 ± 0.7 OUR AVERAGE			
3.65± 1.10±0.50	[1,2] HAYRAPETY...26A	CMS	pp at 13 TeV
1.9 ± 1.1 ±0.3	[3] AAIJ 24A	LHCB	pp at 13 TeV
4.05± 2.05±1.10	[4,5] AAD 21AE	ATLS	pp at 13 TeV
0 ±14 ±4	[6] AAIJ 21AN	LHCB	pp at 7, 8 TeV
5.05± 4.10±2.10	[7,8] AAD 16AP	ATLS	pp at 8 TeV
3.75± 4.85±1.55	[9] KHACHATRY...16S	CMS	pp at 8 TeV
2.9 ± 2.5 ±0.3	[10] AAIJ 15I	LHCB	pp at 7, 8 TeV
− 6 ±13 ±3	[11] AAD 14U	ATLS	pp at 7 TeV
	[12] AALTONEN 12AJ	CDF	$p\bar{p}$ at 1.96 TeV
28 $^{+18}_{-19}$	[13] ABAZOV 12D	D0	$p\bar{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.5 ± 2.5 ±0.5	[14,15] SIRUNYAN 21E	CMS	Repl. by HAYRAPETYAN 26A
4.15± 2.05±0.30	[16] AAIJ 19Q	LHCB	Repl. by AAIJ 24A
− 0.5 ± 3.5 ±0.5	[17] AAIJ 13AR	LHCB	Repl. by AAIJ 15I
−11.0 ±20.5 ±5.0	[18] AAD 12CV	ATLS	Repl. by AAD 14U
22 ±22 ±1	[19] AAIJ 12B	LHCB	Repl. by AAIJ 12Q
− 8 ± 9 ±3	[20] AAIJ 12D	LHCB	Repl. by AAIJ 13AR
0.95 $^{+8.70}_{-8.65}$ $^{+0.15}_{-0.20}$	[21] AAIJ 12Q	LHCB	Repl. by AAIJ 13AR
	[22] AALTONEN 12D	CDF	Repl. by AALTONEN 12AJ
	[23] AALTONEN 08G	CDF	Repl. by AALTONEN 12D
28 $^{+12}_{-15}$ $^{+4}_{-1}$	[13,24] ABAZOV 08AM	D0	Repl. by ABAZOV 12D
39.5 ±28.0 $^{+0.5}_{-7.0}$	[25,26] ABAZOV 07	D0	Repl. by ABAZOV 07N
35 $^{+20}_{-24}$	[26,27] ABAZOV 07N	D0	Repl. by ABAZOV 08AM

→ UNCHECKED ←

OCCUR=3

OCCUR=2

[1] HAYRAPETYAN 26A measured $\phi_s = -2\,\beta_s = (-7.3 \pm 2.2 \pm 1.0) \times 10^{-2}$ rad. using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm. NODE=S086PJS;LINKAGE=GA

[2] Reports a combination of $\beta_s = (3.70 \pm 1.15) \times 10^{-2}$ rad with KHACHATRYAN 16S. NODE=S086PJS;LINKAGE=HA

[3] AAIJ 19Q reports $\phi_s = -2\,\beta_s = -0.039 \pm 0.022 \pm 0.006$ rad. measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays. NODE=S086PJS;LINKAGE=Z

[4] Reports a combination of $0.0435 \pm 0.0180 \pm 0.0105$ with AAD 16AP. NODE=S086PJS;LINKAGE=BA

[5] AAD 21AE measured $\phi_s = -2\,\beta_s = -0.087 \pm 0.036 \pm 0.021$ rad. using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=T

[6] AAIJ 21AN measured $\phi_s = -2\beta_s = 0.00 \pm 0.28 \pm 0.07$ rad, using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with $J/\psi \to e^+ e^-$. NODE=S086PJS;LINKAGE=V

[7] Reports a combination of $0.0435 \pm 0.0180 \pm 0.0105$ with AAD 14U. NODE=S086PJS;LINKAGE=CA

[8] AAD 16AP reports $\phi_s = -2\,\beta_s = -0.090 \pm 0.078 \pm 0.041$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=J

[9] KHACHATRYAN 16S reports $\phi_s = -2\,\beta_s = -0.075 \pm 0.097 \pm 0.031$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=I

[10] AAIJ 15I reports $\phi_s = -2\,\beta_s = -0.058 \pm 0.049 \pm 0.006$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays. It also combines this result with that of AAIJ 14S and quotes $\phi_s = -2\,\beta_s = -0.010 \pm 0.039$ rad. NODE=S086PJS;LINKAGE=H

[11] AAD 14U reports $\phi_s = -2\,\beta_s = 0.12 \pm 0.25 \pm 0.05$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=B

[12] AALTONEN 12AJ reports $-\pi/2 < \beta_s < -1.51$ or $-0.06 < \beta_s < 0.30$, or $1.26 < \beta_s < \pi/2$ rad. at 68% CL. Measured using the time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=AL

[13] ABAZOV 12D reports $\phi_s = -2\,\beta_s = -0.55^{+0.38}_{-0.36}$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. A single error includes both statistical and systematic uncertainties. NODE=S086PJS;LINKAGE=OV

[14] Reports a combination of $0.0105 \pm 0.0220 \pm 0.0050$ with KHACHATRYAN 16S. NODE=S086PJS;LINKAGE=DA

[15] SIRUNYAN 21E measured $\phi_s = -2\,\beta_s = -0.021 \pm 0.044 \pm 0.010$ rad. using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=U

[16] AAIJ 19Q reports $\phi_s = -2\,\beta_s = -0.083 \pm 0.041 \pm 0.006$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi K^+ K^-$ decays. NODE=S086PJS;LINKAGE=O

[17] AAIJ 13AR reports $\phi_s = -2\beta_s = 0.01 \pm 0.07 \pm 0.01$ rad. obtained from combined fit to $B^0_s \to J/\psi K^+ K^-$ and $B^0_s \to J/\psi \pi^+\pi^-$ data sets. Also reports separate results of $\phi_s = 0.07 \pm 0.09 \pm 0.01$ rad. from $B^0_s \to J/\psi K^+ K^-$ decays and $\phi_s = -0.14^{+0.17}_{-0.16} \pm 0.01$ rad. from $B^0_s \to J/\psi\pi^+\pi^-$ decays. NODE=S086PJS;LINKAGE=AR

[18] AAD 12CV reports $\phi_s = -2\,\beta_s = 0.22 \pm 0.41 \pm 0.10$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=AD

[19] Reports $\phi_s = -2\,\beta_s = -0.44 \pm 0.44 \pm 0.02$ rad. that was measured using a time-dependent fit to $B^0_s \to J/\psi f_0(980)$ decays. NODE=S086PJS;LINKAGE=AI

[20] Reports $\phi_s = -2\,\beta_s = 0.15 \pm 0.18 \pm 0.06$ rad. that was measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=AJ

[21] Reports $\phi_s = -2\,\beta_s = -0.019^{+0.173}_{-0.174}{}^{+0.004}_{-0.003}$ rad. which was measured using a time-dependent fit to $B^0_s \to J/\psi\pi^+\pi^-$ decays, with the $\pi^+\pi^-$ mass within 775–1550 MeV. Searches for, but finds no evidence, for direct *CP* violation in $B^0_s \to J/\psi\pi\pi$ decays. NODE=S086PJS;LINKAGE=IA

[22] Reports $0.02 < \phi_s < 0.52$ or $1.08 < \phi_s < 1.55$ rad. at 68% C.L. confidence regions in the two-dimensional space of ϕ_s and $\Delta\Gamma_{B^0_s}$ from $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=AT

[23] Reports $0.32 < 2\beta_s < 2.82$ rad. at 68% C.L. and confidence regions in the two-dimensional space of $2\beta_s$ and $\Delta\Gamma$ from the first measurement of $B^0_s \to J/\psi\phi$ decays using flavor tagging. The probability of a deviation from SM prediction as large as the level of observed data is 15%. NODE=S086PJS;LINKAGE=AA

[24] Reports $\phi_s = -2\,\beta_s$ and obtains 90% CL interval $-0.03 < \beta_s < 0.60$ rad. NODE=S086PJS;LINKAGE=ZV

[25] The first direct measurement of the *CP*-violating mixing phase is reported from the time-dependent analysis of flavor untagged $B^0_s \to J/\psi\phi$ decays. NODE=S086PJS;LINKAGE=AZ

[26] Reports ϕ_s which equals to $-2\beta_s$. NODE=S086PJS;LINKAGE=RP

[27] Combines D0 collaboration measurements of time-dependent angular distributions in $B^0_s \to J/\psi\phi$ and charge asymmetry in semileptonic decays. There is a 4-fold ambiguity in the solution. NODE=S086PJS;LINKAGE=ZO

$|\lambda|$ ($B^0_s \to J/\psi(1S)\phi$)

NODE=S086LJP

λ = q/p$\cdot A_f/\overline{A}_f$ is a phase-convention-independent observable quantity for the final state f. See the review on "CP Violation in the Quark Sector" for details.

NODE=S086LJP

NODE=S086LJP

VALUE	DOCUMENT ID		TECN	COMMENT
0.995±0.009 OUR EVALUATION (Produced by HFLAV)				
0.994±0.009 OUR AVERAGE				
[0.988 ± 0.009 OUR 2025 AVERAGE]				
1.011±0.014±0.015	[1] HAYRAPETY...	26A	CMS	pp at 13 TeV
0.990±0.010	AAIJ	24A	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.877^{+0.112}_{-0.116}\pm0.031$	AAIJ	21AN	LHCB	Repl. by AAIJ 24A
0.972±0.026±0.008	[2] SIRUNYAN	21E	CMS	Repl. by HAYRAPETYAN 26A
1.012±0.016±0.006	AAIJ	19Q	LHCB	Repl. by AAIJ 24A
0.964±0.019±0.007	AAIJ	15I	LHCB	Repl. by AAIJ 24A
0.93 ±0.03 ±0.02	AAIJ	13AR	LHCB	Repl. by AAIJ 15I

→ UNCHECKED ← NEW

[1] Measured using a time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays with the ML-improved flavor-tagging algorithm.

NODE=S086LJP;LINKAGE=A

[2] Measured using time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays.

NODE=S086LJP;LINKAGE=B

$|\lambda|$ ($b \to c\overline{c}s$)

NODE=S086LAM

λ = q/p$\cdot A_f/\overline{A}_f$ is a phase-convention-independent observable quantity for the final state f. See the review on "CP Violation in the Quark Sector" for details.

NODE=S086LAM

NODE=S086LAM

VALUE	DOCUMENT ID		TECN	COMMENT
0.989±0.008 OUR AVERAGE				
1.145±0.126±0.031	[1] AAIJ	25A	LHCB	pp at 13 TeV
0.990±0.010	[2] AAIJ	24A	LHCB	pp at 7, 8, 13 TeV
0.972±0.026±0.008	[3] SIRUNYAN	21E	CMS	pp at 13 TeV
0.949±0.036±0.019	[4] AAIJ	19AF	LHCB	pp at 7, 8, 13 TeV
0.994±0.018±0.006	[5] AAIJ	17V	LHCB	pp at 7, 8 TeV
$1.045^{+0.069}_{-0.050}\pm0.007$	[6] AAIJ	16AK	LHCB	pp at 7, 8 TeV
$0.91\ ^{+0.18}_{-0.15}\pm0.02$	[1] AAIJ	14AY	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.004±0.030±0.009	[7] AAIJ	23AT	LHCB	pp at 13 TeV
1.009±0.030	[7] AAIJ	23AT	LHCB	pp at 7, 8 and 13 TeV
$0.877^{+0.112}_{-0.116}\pm0.031$	AAIJ	21AN	LHCB	Repl. by AAIJ 24A
0.99 ±0.05 ±0.01	[7] AAIJ	19AP	LHCB	Repl. by AAIJ 23AT
1.012±0.016±0.006	AAIJ	19Q	LHCB	Repl. by AAIJ 24A
1.035±0.034±0.089	[8] AAIJ	18S	LHCB	pp at 7, 8 TeV
0.964±0.019±0.007	AAIJ	15I	LHCB	Repl. by AAIJ 24A
1.04 ±0.07 ±0.03	[7] AAIJ	14AE	LHCB	Repl. by AAIJ 19AP
0.93 ±0.03 ±0.02	AAIJ	13AR	LHCB	Repl. by AAIJ 15I

OCCUR=2

[1] Measured in $B^0_s \to D^+_s D^-_s$ decays.

NODE=S086LAM;LINKAGE=AA

[2] Measured using time-dependent angular analysis of $B^0_s \to J/\psi K^+K^-$ in the region m(KK) in the vicinity of the $\phi(1020)$ resonance.

NODE=S086LAM;LINKAGE=I

[3] Measured using time-dependent angular analysis of $B^0_s \to J/\psi\phi$ decays.

NODE=S086LAM;LINKAGE=J

[4] Measured using time-dependent analysis of $B^0_s \to J/\psi\pi^+\pi^-$ decays.

NODE=S086LAM;LINKAGE=D

[5] Measured using time-dependent angular analysis of $B^0_s \to J/\psi K^+K^-$ in the region m(KK) > 1.05 GeV.

NODE=S086LAM;LINKAGE=B

[6] Measured using time-dependent angular analysis of $B^0_s \to \psi(2S)\phi$ decays.

NODE=S086LAM;LINKAGE=A

[7] Measured in $B^0_s \to \phi\phi$ decays.

NODE=S086LAM;LINKAGE=E

[8] Measured in $B^0_s \to (K^+\pi^-)(K^-\pi^+)$ in the region 0.75 < m($K^\pm\pi^\mp$) < 1.6 GeV.

NODE=S086LAM;LINKAGE=C

A, CP violation parameter

NODE=S086JKA

$A = -2\ \mathrm{Re}(\lambda)\ /\ (1 + |\lambda|^2)$

NODE=S086JKA

NODE=S086JKA

VALUE	DOCUMENT ID		TECN	COMMENT
−0.79±0.08 OUR AVERAGE				
−0.83±0.05±0.09	[1] AAIJ	21O	LHCB	pp at 13 TeV
−0.79±0.07±0.10	[1] AAIJ	18O	LHCB	pp at 7, 8 TeV
$0.49^{+0.77}_{-0.65}\pm0.06$	[2] AAIJ	15AL	LHCB	pp at 7, 8 TeV

[1] Measured in $B^0_s \to K^+K^-$ decays.

NODE=S086JKA;LINKAGE=B

[2] Measured in $B^0_s \to J/\psi K^0_S$ decays.

NODE=S086JKA;LINKAGE=A

C, *CP* violation parameter

NODE=S086JKC

C = (1 − $|\lambda|^2$) / (1 + $|\lambda|^2$)

NODE=S086JKC

VALUE	DOCUMENT ID		TECN	COMMENT
0.19±0.06 OUR AVERAGE				
0.20±0.06±0.02	[1] AAIJ	18O	LHCB	pp at 7, 8 TeV
−0.28±0.41±0.08	[2] AAIJ	15AL	LHCB	pp at 7, 8 TeV

NODE=S086JKC

[1] Measured in $B^0_s \to K^+ K^-$ decays. NODE=S086JKC;LINKAGE=B

[2] Measured in $B^0_s \to J/\psi K^0_S$ decays. NODE=S086JKC;LINKAGE=A

S, *CP* violation parameter

NODE=S086JKS

S = −2 Im(λ) / (1 + $|\lambda|^2$)

NODE=S086JKS

VALUE	DOCUMENT ID		TECN	COMMENT
0.17±0.06 OUR AVERAGE				
0.18±0.06±0.02	[1] AAIJ	18O	LHCB	pp at 7, 8 TeV
−0.08±0.40±0.08	[2] AAIJ	15AL	LHCB	pp at 7, 8 TeV

NODE=S086JKS

[1] Measured in $B^0_s \to K^+ K^-$ decays. NODE=S086JKS;LINKAGE=B

[2] Measured in $B^0_s \to J/\psi K^0_S$ decays. NODE=S086JKS;LINKAGE=A

$A^L_{CP}(B_s \to J/\psi \overline{K}^*(892)^0)$

NODE=S086PK4

VALUE	DOCUMENT ID		TECN	COMMENT
0.021±0.027 OUR AVERAGE [−0.05 ± 0.06 OUR 2025 AVERAGE]				
0.021±0.026±0.007	[1] AAIJ	25AQ	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.014±0.029±0.007	AAIJ	25AQ	LHCB	pp at 13 TeV
−0.048±0.057±0.020	AAIJ	15AV	LHCB	Repl. by AAIJ 25AQ

NODE=S086PK4

NEW

OCCUR=2

[1] Combination with measurement from refAAIJ 2025AQ. NODE=S086PK4;LINKAGE=A

$A^{\parallel}_{CP}(B_s \to J/\psi \overline{K}^*(892)^0)$

NODE=S086PK5

VALUE	DOCUMENT ID		TECN	COMMENT
−0.07 ±0.06 OUR AVERAGE [0.17 ± 0.15 OUR 2025 AVERAGE]				
−0.073±0.060±0.007	[1] AAIJ	25AQ	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−0.055±0.065±0.007	AAIJ	25AQ	LHCB	pp at 13 TeV
0.171±0.152±0.028	AAIJ	15AV	LHCB	Repl. by AAIJ 25AQ

NODE=S086PK5

NEW

OCCUR=2

[1] Combination with measurement from AAIJ 15AV. NODE=S086PK5;LINKAGE=A

$A^{\perp}_{CP}(B_s \to J/\psi \overline{K}^*(892)^0)$

NODE=S086PK6

VALUE	DOCUMENT ID		TECN	COMMENT
0.06 ±0.05 OUR AVERAGE [−0.05 ± 0.10 OUR 2025 AVERAGE]				
0.057±0.049±0.014	[1] AAIJ	25AQ	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.060±0.057±0.016	AAIJ	25AQ	LHCB	pp at 13 TeV
−0.049±0.096±0.025	AAIJ	15AV	LHCB	Repl. by AAIJ 25AQ

NODE=S086PK6

NEW

OCCUR=2

[1] Combination with measurement from AAIJ 15AV. NODE=S086PK6;LINKAGE=A

$A_{CP}(B_s \to \pi^+ K^-)$

NODE=S086CP1

A_{CP} is defined as

NODE=S086CP1

$$\frac{B(\overline{B}^0_s \to f) - B(B^0_s \to \overline{f})}{B(\overline{B}^0_s \to f) + B(B^0_s \to \overline{f})},$$

the *CP*-violation asymmetry of exclusive B^0_s and $\overline{B}^0_s$ decay.

NODE=S086CP1

VALUE	DOCUMENT ID		TECN	COMMENT
0.224±0.012 OUR AVERAGE				
0.236±0.013±0.011	AAIJ	21O	LHCB	pp at 13 TeV
0.213±0.015±0.007	AAIJ	18O	LHCB	pp at 7, 8 TeV
0.22 ±0.07 ±0.02	AALTONEN	14P	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.27 ±0.04 ±0.01	AAIJ	13AX	LHCB	Repl. by AAIJ 18O
0.27 ±0.08 ±0.02	AAIJ	12V	LHCB	Repl. by AAIJ 13AX
0.39 ±0.15 ±0.08	AALTONEN	11N	CDF	Repl. by AALTONEN 14P

$A_{CP}(B^0_s \to [K^+ K^-]_D \overline{K}^*(892)^0)$

NODE=S086CP2

VALUE	DOCUMENT ID		TECN	COMMENT
0.062±0.032±0.021	AAIJ	24M	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−0.04 ±0.07 ±0.02	AAIJ	14BN	LHCB	Repl. by AAIJ 24M
0.04 ±0.16 ±0.01	AAIJ	13L	LHCB	Repl. by AAIJ 14BN

NODE=S086CP2

$A_{CP}(B_s^0 \to [\pi^+ K^-]_D K^*(892)^0)$ NODE=S086CP3

VALUE	DOCUMENT ID	TECN	COMMENT
$-0.009 \pm 0.011 \pm 0.020$	AAIJ 24M	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$-0.01 \pm 0.03 \pm 0.02$	AAIJ 14BN	LHCB	Repl. by AAIJ 24M

$A_{CP}(B_s^0 \to [K^+ \pi^-]_D \overline{K}^*(892)^0)$ NODE=S086A38

NODE=S086A38

$A_{CP}(B_s^0 \to [\pi^+ \pi^-]_D K^*(892)^0)$ NODE=S086CP4

VALUE	DOCUMENT ID	TECN	COMMENT
$-0.001 \pm 0.056 \pm 0.021$	AAIJ 24M	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.06 \pm 0.13 \pm 0.02$	AAIJ 14BN	LHCB	Repl. by AAIJ 24M

$A_{CP}(B_s^0 \to [K^+ \pi^- \pi^+ \pi^-]_D \overline{K}^*(892)^0)$ NODE=S086A37

VALUE	DOCUMENT ID	TECN	COMMENT
$-0.029 \pm 0.012 \pm 0.021$	AAIJ 24M	LHCB	pp at 7, 8, 13 TeV

$A_{CP}(B_s^0 \to [K^- \pi^+ \pi^+ \pi^-]_D \overline{K}^*(892)^0)$ NODE=S086A39

NODE=S086A39

$A_{CP}(B_s^0 \to [\pi^+ \pi^- \pi^+ \pi^-]_D \overline{K}^*(892)^0)$ NODE=S086A41

VALUE	DOCUMENT ID	TECN	COMMENT
$0.017 \pm 0.044 \pm 0.022$	AAIJ 24M	LHCB	pp at 7, 8, 13 TeV

$R_s^+ = \Gamma(B_s^0 \to [\pi^- K^+]_D \overline{K}^{*0}) / \Gamma(B_s^0 \to [\pi^+ K^-]_D \overline{K}^{*0})$ NODE=S086A40

VALUE	DOCUMENT ID	TECN	COMMENT
$0.004 \pm 0.002 \pm 0.006$	AAIJ 24M	LHCB	pp at 7, 8, 13 TeV

$R_s^- = \Gamma(\overline{B}_s^0 \to [\pi^+ K^-]_D K^{*0}) / \Gamma(\overline{B}_s^0 \to [\pi^- K^+]_D K^{*0})$ NODE=S086A42

VALUE	DOCUMENT ID	TECN	COMMENT
$0.004 \pm 0.002 \pm 0.006$	AAIJ 24M	LHCB	pp at 7, 8, 13 TeV

$R_s^+ = \Gamma(B_s^0 \to [\pi^- K^+ \pi^+ \pi^-]_D \overline{K}^{*0}) / \Gamma(B_s^0 \to [\pi^+ K^- \pi^+ \pi^-]_D \overline{K}^{*0})$ NODE=S086A43

VALUE	DOCUMENT ID	TECN	COMMENT
$0.019 \pm 0.004 \pm 0.007$	AAIJ 24M	LHCB	pp at 7, 8, 13 TeV

$R_s^- = \Gamma(\overline{B}_s^0 \to [\pi^+ K^- \pi^+ \pi^-]_D K^{*0}) / \Gamma(\overline{B}_s^0 \to [\pi^- K^+ \pi^+ \pi^-]_D K^{*0})$ NODE=S086A44

VALUE	DOCUMENT ID	TECN	COMMENT
$0.015 \pm 0.004 \pm 0.007$	AAIJ 24M	LHCB	pp at 7, 8, 13 TeV

$S(B_s^0 \to \phi\gamma)$ NODE=S086A23

VALUE	DOCUMENT ID	TECN	COMMENT
$0.43 \pm 0.30 \pm 0.11$	[1] AAIJ 19AE	LHCB	pp at 7, 8 TeV

[1] Measured in flavor tagged time dependent analysis. NODE=S086A23;LINKAGE=A

$C(B_s^0 \to \phi\gamma)$ NODE=S086A24

VALUE	DOCUMENT ID	TECN	COMMENT
$0.11 \pm 0.29 \pm 0.11$	[1] AAIJ 19AE	LHCB	pp at 7, 8 TeV

[1] Measured in flavor tagged time dependent analysis. NODE=S086A24;LINKAGE=A

$A^{\Delta}(B_s^0 \to \phi\gamma)$ NODE=S086A07

$A^{\Delta}(B_s \to \phi\gamma)$ is the multiplicative coefficient of the $\sinh(\Delta\Gamma t/2)$ term in the $B_s \to \phi\gamma$ decay rate time dependence. NODE=S086A07

NODE=S086A07

VALUE	DOCUMENT ID	TECN	COMMENT
$-0.67^{+0.37}_{-0.41} \pm 0.17$	[1] AAIJ 19AE	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$-0.98^{+0.46}_{-0.52}{}^{+0.23}_{-0.20}$	[2] AAIJ 17B	LHCB	Repl. by AAIJ 19AE

[1] Measured in flavor tagged time dependent analysis, using tagged and un-tagged events. This result updates AAIJ 17B with better selection efficiency and other analysis improvements. NODE=S086A07;LINKAGE=B

[2] Measured in time dependent analysis without initial flavor tagging. NODE=S086A07;LINKAGE=A

CPT VIOLATION PARAMETERS

NODE=S086255

In the B_s^0 mixing, propagating mass eigenstates can be written as

NODE=S086255

$$|B_{sL}\rangle \propto \text{p}\sqrt{1-\xi}\,|B_s^0\rangle + \text{q}\sqrt{1+\xi}\,|\overline{B}_s^0\rangle$$
$$|B_{sH}\rangle \propto \text{p}\sqrt{1+\xi}\,|B_s^0\rangle - \text{q}\sqrt{1-\xi}\,|\overline{B}_s^0\rangle$$

where parameter ξ controls *CPT* violation. If ξ is zero, then *CPT* is conserved. The parameter ξ can be written as

$$\xi = \frac{2(M_{11}-M_{22})-i(\Gamma_{11}-\Gamma_{22})}{-2\Delta m_s+i\Delta\Gamma_s} \approx \frac{-2\beta^{\mu}\Delta a_{\mu}}{2\Delta m_s-i\Delta\Gamma_s},$$

where M_{ii}, Γ_{ii}, Δm_s, and $\Delta\Gamma_s$ are parameters of Hamiltonian governing B_s oscillations, β^{μ} is the B_s^0 meson velocity and Δa_{μ} characterizes Lorentz-invariance violation.

$\Delta a_{\perp}$

NODE=S086CT1
NODE=S086CT1

VALUE (10^{-12} GeV)	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
$-0.47\pm0.39\pm0.08$		[1] AAIJ	16E	LHCB	pp at 7, 8 TeV
$<$ **1.2**	95	[2] ABAZOV	15L	D0	$p\overline{p}$ at 1.96 TeV

[1] Uses $B_s^0 \to J/\psi K^+ K^-$ decays.

NODE=S086CT1;LINKAGE=B

[2] Measured in semileptonic $B_s^0 \to D_s^- \mu^+ X$ decays. Also extracts limit on time and longitudinal components ($-0.8 < \Delta a_T - 0.396\,\Delta a_Z < 3.9$) 10^{-13} GeV.

NODE=S086CT1;LINKAGE=A

$\Delta a_{\parallel}$

NODE=S086CT0
NODE=S086CT0

VALUE (10^{-14} GeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$-0.89\pm1.41\pm0.36$	[1] AAIJ	16E	LHCB	pp at 7, 8 TeV

[1] Uses $B_s^0 \to J/\psi K^+ K^-$ decays.

NODE=S086CT0;LINKAGE=A

Δa_X

NODE=S086A03
NODE=S086A03

VALUE (10^{-14} GeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$+1.01\pm2.08\pm0.71$	[1] AAIJ	16E	LHCB	pp at 7, 8 TeV

[1] Uses $B_s^0 \to J/\psi K^+ K^-$ decays.

NODE=S086A03;LINKAGE=A

Δa_Y

NODE=S086A04
NODE=S086A04

VALUE (10^{-14} GeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$-3.83\pm2.09\pm0.71$	[1] AAIJ	16E	LHCB	pp at 7, 8 TeV

[1] Uses $B_s^0 \to J/\psi K^+ K^-$ decays.

NODE=S086A04;LINKAGE=A

Re(ξ)

NODE=S086A00
NODE=S086A00

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
$-0.022\pm0.033\pm0.003$	[1] AAIJ	16E	LHCB	pp at 7, 8 TeV

[1] Uses $B_s^0 \to J/\psi K^+ K^-$ decays.

NODE=S086A00;LINKAGE=A

Im(ξ)

NODE=S086A01
NODE=S086A01

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
$0.004\pm0.011\pm0.002$	[1] AAIJ	16E	LHCB	pp at 7, 8 TeV

[1] Uses $B_s^0 \to J/\psi K^+ K^-$ decays.

NODE=S086A01;LINKAGE=A

PARTIAL BRANCHING FRACTIONS IN $B_s \to \phi\ell^+\ell^-$

NODE=S086245

B($B_s \to \phi\ell^+\ell^-$) ($0.1 < q^2 < 2.0$ GeV^2/c^4)

NODE=S086PB1
NODE=S086PB1

VALUE (units 10^{-7})	*DOCUMENT ID*		*TECN*	*COMMENT*
1.14 $\pm$0.16 OUR AVERAGE				
$1.11\,^{+0.14}_{-0.13}\pm0.09$	[1] AAIJ	15AQ	LHCB	pp at 7, 8 TeV
$2.78\pm0.95\pm0.89$	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.897\,^{+0.207}_{-0.186}\pm0.097$	[1] AAIJ	13X	LHCB	Repl. by AAIJ 15AQ

[1] Measured in $B_s^0 \to \phi\mu^+\mu^-$ decays.

NODE=S086PB1;LINKAGE=A

B($B^0_s \to \phi \ell^+ \ell^-$) (0.1 < q^2 < 0.98 GeV^2/c^4)

NODE=S086A30
NODE=S086A30

VALUE (units 10^{-8})	DOCUMENT ID	TECN	COMMENT
6.81±0.47±0.34	[1] AAIJ 21AG	LHCB	pp at 7, 8, 13 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays

NODE=S086A30;LINKAGE=A

B($B^0_s \to \phi \ell^+ \ell^-$) (1.1 < q^2 < 2.5 GeV^2/c^4)

NODE=S086A31
NODE=S086A31

VALUE (units 10^{-8})	DOCUMENT ID	TECN	COMMENT
4.41±0.41±0.24	[1] AAIJ 21AG	LHCB	pp at 7, 8, 13 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays

NODE=S086A31;LINKAGE=A

B($B_s \to \phi \ell^+ \ell^-$) (2.0 < q^2 < 5.0 GeV^2/c^4)

NODE=S086PB2
NODE=S086PB2

VALUE (units 10^{-7})	DOCUMENT ID	TECN	COMMENT
0.77 ±0.12 ±0.06	[1] AAIJ 15AQ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.529^{+0.182}_{-0.159}\pm0.057$	[1,2] AAIJ 13X	LHCB	Repl. by AAIJ 15AQ
0.58 ±0.55 ±0.19	[2] AALTONEN 11AI	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays.

NODE=S086PB2;LINKAGE=B

[2] Measured in $2<q^2<4.3$ GeV^2/c^4.

NODE=S086PB2;LINKAGE=A

B($B^0_s \to \phi \ell^+ \ell^-$) (2.5 < q^2 < 4.0 GeV^2/c^4)

NODE=S086A32
NODE=S086A32

VALUE (units 10^{-8})	DOCUMENT ID	TECN	COMMENT
3.51±0.39±0.18	[1] AAIJ 21AG	LHCB	pp at 7, 8, 13 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays

NODE=S086A32;LINKAGE=A

B($B^0_s \to \phi \ell^+ \ell^-$) (4.0 < q^2 < 6.0 GeV^2/c^4)

NODE=S086A33
NODE=S086A33

VALUE (units 10^{-8})	DOCUMENT ID	TECN	COMMENT
6.22±0.48±0.32	[1] AAIJ 21AG	LHCB	pp at 7, 8, 13 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays

NODE=S086A33;LINKAGE=A

B($B_s \to \phi \ell^+ \ell^-$) (5.0 < q^2 < 8.0 GeV^2/c^4)

NODE=S086PB3
NODE=S086PB3

VALUE (units 10^{-7})	DOCUMENT ID	TECN	COMMENT
0.96±0.13±0.08	[1] AAIJ 15AQ	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$1.38^{+0.25}_{-0.23}\pm0.14$	[1,2] AAIJ 13X	LHCB	Repl. by AAIJ 15AQ
1.34±0.83±0.43	[2] AALTONEN 11AI	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays.

NODE=S086PB3;LINKAGE=B

[2] Measured in $4.3<q^2<8.68$ GeV^2/c^4.

NODE=S086PB3;LINKAGE=A

B($B^0_s \to \phi \ell^+ \ell^-$) (6.0 < q^2 < 8.0 GeV^2/c^4)

NODE=S086A34
NODE=S086A34

VALUE (units 10^{-8})	DOCUMENT ID	TECN	COMMENT
6.30±0.48±0.32	[1] AAIJ 21AG	LHCB	pp at 7, 8, 13 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays

NODE=S086A34;LINKAGE=A

B($B_s \to \phi \ell^+ \ell^-$) (11.0 < q^2 < 12.5 GeV^2/c^4)

NODE=S086PB4
NODE=S086PB4

VALUE (units 10^{-7})	DOCUMENT ID	TECN	COMMENT
0.717±0.045±0.036	[1] AAIJ 21AG	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.71 ±0.10 ±0.06	[1] AAIJ 15AQ	LHCB	Repl. by AAIJ 21AG
$1.18\ ^{+0.22}_{-0.21}\ \pm0.14$	[1,2] AAIJ 13X	LHCB	Repl. by AAIJ 15AQ
2.98 ±0.95 ±0.95	[2] AALTONEN 11AI	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays.

NODE=S086PB4;LINKAGE=B

[2] Measured in $10.9<q^2<12.86$ GeV^2/c^4.

NODE=S086PB4;LINKAGE=A

B($B^0_s \to \phi \ell^+ \ell^-$) (15.0 < q^2 < 19.0 GeV^2/c^4)

NODE=S086A35
NODE=S086A35

VALUE (units 10^{-8})	DOCUMENT ID	TECN	COMMENT
18.52±0.80±1.00	[1] AAIJ 21AG	LHCB	pp at 7, 8, 13 TeV

[1] Measured in $B^0_s \to \phi \mu^+ \mu^-$ decays

NODE=S086A35;LINKAGE=A

B($B_s \to \phi \ell^+ \ell^-$) (15.0 < q^2 < 17.0 GeV^2/c^4)

NODE=S086PB5
NODE=S086PB5

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
1.050±0.058±0.054	[1] AAIJ	21AG	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.90 ±0.11 ±0.07	[1] AAIJ	15AQ	LHCB	Repl. by AAIJ 21AG
$0.760^{+0.189}_{-0.169}\pm0.087$	[1,2] AAIJ	13X	LHCB	Repl. by AAIJ 15AQ
1.86 ±0.66 ±0.59	[2] AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured in $B_s^0 \to \phi \mu^+ \mu^-$ decays.
[2] Measured in 14.18<q^2 <16 GeV^2/c^4.

NODE=S086PB5;LINKAGE=B
NODE=S086PB5;LINKAGE=A

B($B_s \to \phi \ell^+ \ell^-$) (17.0 < q^2 < 19.0 GeV^2/c^4)

NODE=S086PB6
NODE=S086PB6

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
0.838±0.058±0.046	[1] AAIJ	21AG	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.79 ±0.11 ±0.07	[1] AAIJ	15AQ	LHCB	Repl. by AAIJ 21AG
$1.06\ ^{+0.23}_{-0.21}\pm0.12$	[1,2] AAIJ	13X	LHCB	Repl. by AAIJ 15AQ
2.32 ±0.76 ±0.74	[2] AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured in $B_s^0 \to \phi \mu^+ \mu^-$ decays.
[2] Measured in 16<q^2 <19 GeV^2/c^4.

NODE=S086PB6;LINKAGE=B
NODE=S086PB6;LINKAGE=A

B($B_s \to \phi \ell^+ \ell^-$) (1.0 < q^2 < 6.0 GeV^2/c^4)

NODE=S086PB7
NODE=S086PB7

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
1.44 ±0.11 OUR AVERAGE				
1.440±0.075±0.075	[1] AAIJ	21AG	LHCB	pp at 7, 8, 13 TeV
1.14 ±0.79 ±0.36	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.29 ±0.16 ±0.10	[1] AAIJ	15AQ	LHCB	Repl. by AAIJ 21AG
$1.14\ ^{+0.25}_{-0.23}\pm0.13$	[1] AAIJ	13X	LHCB	Repl. by AAIJ 15AQ

[1] Measured in $B_s^0 \to \phi \mu^+ \mu^-$ decays.

NODE=S086PB7;LINKAGE=A

B($B_s \to \phi \ell^+ \ell^-$) (0.0 < q^2 < 4.3 GeV^2/c^4)

NODE=S086PB8
NODE=S086PB8

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
3.30±1.09±1.05	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV

B($B_s \to \phi e^+ e^-$) (0.1 < q^2 < 1.1 GeV^2/c^4)

NODE=S086A45
NODE=S086A45

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.38^{+0.25}_{-0.22}\pm0.20}$	[1] AAIJ	25K	LHCB	pp at 7, 8 and 13 TeV

[1] The second uncertainty includes the systematic, the uncertainties on the ratio of dB($B_s^0 \to \phi \mu^+ \mu^-$)/dq^2/B($B_s^0 \to J/\psi \phi$), and B($B_s^0 \to J/\psi \phi$).

NODE=S086A45;LINKAGE=A

B($B_s \to \phi e^+ e^-$) (1.1 < q^2 < 6.0 GeV^2/c^4)

NODE=S086A46
NODE=S086A46

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
1.27±0.29±0.085	[1] AAIJ	25K	LHCB	pp at 7, 8 and 13 TeV

[1] The second uncertainty includes the systematic, the uncertainties on the ratio of dB($B_s^0 \to \phi \mu^+ \mu^-$)/dq^2/B($B_s^0 \to J/\psi \phi$), and B($B_s^0 \to J/\psi \phi$).

NODE=S086A46;LINKAGE=A

B($B_s \to \phi e^+ e^-$) (15.0 < q^2 < 19.0 GeV^2/c^4)

NODE=S086A47
NODE=S086A47

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
1.56±0.44±0.20	[1] AAIJ	25K	LHCB	pp at 7, 8 and 13 TeV

[1] The second uncertainty includes the systematic, the uncertainties on the ratio of dB($B_s^0 \to \phi \mu^+ \mu^-$)/dq^2/B($B_s^0 \to J/\psi \phi$), and B($B_s^0 \to J/\psi \phi$).

NODE=S086A47;LINKAGE=A

[B($B_s \to \phi e^+ e^-$)/B($B_s \to J/\psi(J/\psi \to e^+ e^-)\phi$)]/[B($B_s \to \phi \mu^+ \mu^-$)/B($B_s \to J/\psi(J/\psi \to \mu^+ \mu^-)\phi$)] (0.1 < q^2 < 1.1 GeV^2/c^4)

NODE=S086A48
NODE=S086A48

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.57^{+0.28}_{-0.25}\pm0.05}$	AAIJ	25K	LHCB	pp at 7, 8 and 13 TeV

$[B(B_s \to \phi e^+ e^-)/B(B_s \to J/\psi(J/\psi \to e^+ e^-)\phi)]/[B(B_s \to \phi \mu^+ \mu^-)/B(B_s \to J/\psi(J/\psi \to \mu^+ \mu^-)\phi)]$ ($1.1 < q^2 < 6.0$ GeV^2/c^4)

NODE=S086A49
NODE=S086A49

VALUE	DOCUMENT ID		TECN	COMMENT
$0.91^{+0.20}_{-0.19} \pm 0.05$	AAIJ	25K	LHCB	pp at 7, 8 and 13 TeV

$[B(B_s \to \phi e^+ e^-)/B(B_s \to J/\psi(J/\psi \to e^+ e^-)\phi)]/[B(B_s \to \phi \mu^+ \mu^-)/B(B_s \to J/\psi(J/\psi \to \mu^+ \mu^-)\phi)]$ ($15.0 < q^2 < 19.0$ GeV^2/c^4)

NODE=S086A50
NODE=S086A50

VALUE	DOCUMENT ID		TECN	COMMENT
$0.85^{+0.24}_{-0.23} \pm 0.10$	AAIJ	25K	LHCB	pp at 7, 8 and 13 TeV

PRODUCTION ASYMMETRIES

NODE=S086250

$A_{\mathcal{P}}(B^0_s)$

NODE=S086PAX

$A_{\mathcal{P}}(B^0_s) = [\sigma(\overline{B}^0_s) - \sigma(B^0_s)] \;/\; [\sigma(\overline{B}^0_s) + \sigma(B^0_s)]$

NODE=S086PAX
NODE=S086PAX

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.2 ±1.6 OUR AVERAGE				
$-0.65 \pm 2.88 \pm 0.59$	[1] AAIJ	17BF	LHCB	pp at 7 TeV
$1.98 \pm 1.90 \pm 0.59$	[1] AAIJ	17BF	LHCB	pp at 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.09 \pm 2.61 \pm 0.66$	[2] AAIJ	14BP	LHCB	Repl. by AAIJ 17BF, pp at 7 TeV

OCCUR=2

[1] Based on time-dependent analysis of $B^0_s \to D^-_s \pi^+$ in kinematic range $2 < p_T < 30$ GeV/c and $2.1 < \eta < 4.5$.

NODE=S086PAX;LINKAGE=B

[2] Based on time-dependent analysis of $B^0_s \to D^-_s \pi^+$ in kinematic range $4 < p_T < 30$ GeV/c and $2.5 < \eta < 4.5$.

NODE=S086PAX;LINKAGE=A

$B^0_s \to D^{*-}_s \ell^+ \nu_\ell$ FORM FACTORS

NODE=S086260

ρ^2 (form factor slope)

NODE=S086A27
NODE=S086A27

VALUE	DOCUMENT ID		TECN	COMMENT
1.17±0.08 OUR AVERAGE				
$1.16 \pm 0.05 \pm 0.07$	[1] AAIJ	20AW	LHCB	pp at 13 TeV
$1.23 \pm 0.17 \pm 0.05$	[2] AAIJ	20E	LHCB	pp at 7,8 TeV

[1] The $B^0_s \to D^{*-}_s \mu^+ \nu_\mu$ decay is reconstructed through the decays of $D^{*-}_s \to D^-_s \gamma$, $D^-_s \to K^- K^+ \pi^-$.

NODE=S086A27;LINKAGE=A

[2] The $B^0_s \to D^{*-}_s \mu^+ \nu_\mu$ decay is reconstructed inclusively without γ from the decays of $D^{*-}_s \to D^-_s \gamma$, $D^-_s \to K^- K^+ \pi^-$.

NODE=S086A27;LINKAGE=B

B^0_s REFERENCES

NODE=S086

HAYRAPETY...	26A	arXiv:2412.19952	A. Hayrapetyan *et al.*	(CMS Collab.)	REFID=63790
AAIJ	25A	JHEP 2501 061	R. Aaij *et al.*	(LHCb Collab.)	REFID=63227
AAIJ	25AC	JHEP 2507 069	R. Aaij *et al.*	(LHCb Collab.)	REFID=63554
AAIJ	25AN	JHEP 2510 113	R. Aaij *et al.*	(LHCb Collab.)	REFID=63703
AAIJ	25AQ	JHEP 2510 173	R. Aaij *et al.*	(LHCb Collab.)	REFID=63707
AAIJ	25K	PRL 134 121803	R. Aaij *et al.*	(LHCb Collab.)	REFID=63324
AAIJ	25S	JHEP 2503 047	R. Aaij *et al.*	(LHCb Collab.)	REFID=63450
AAIJ	25T	JHEP 2503 139	R. Aaij *et al.*	(LHCb Collab.)	REFID=63453
AAIJ	25X	JHEP 2507 121	R. Aaij *et al.*	(LHCb Collab.)	REFID=63486
ADACHI	25O	JHEP 2504 114	I. Adachi *et al.*	(BELLE and BELLEII Collab.)	REFID=63463
AAIJ	24A	PRL 132 051802	R. Aaij *et al.*	(LHCb Collab.)	REFID=62637
AAIJ	24AK	PR D110 072014	R. Aaij *et al.*	(LHCb Collab.)	REFID=63089
AAIJ	24F	JHEP 2402 032	R. Aaij *et al.*	(LHCb Collab.)	REFID=62831
AAIJ	24M	JHEP 2405 025	R. Aaij *et al.*	(LHCb Collab.)	REFID=62849
AAIJ	24O	JHEP 2405 253	R. Aaij *et al.*	(LHCb Collab.)	REFID=62858
AAIJ	24Q	JHEP 2407 101	R. Aaij *et al.*	(LHCb Collab.)	REFID=62870
AAIJ	24S	JHEP 2408 093	R. Aaij *et al.*	(LHCb Collab.)	REFID=62878
ALONSO-ALV...	24	EPJ C84 553	G. Alonso-Alvarez, M.E. Abenza	(MCGI, TNTO+)	REFID=62892
HAYRAPETY...	24AX	JHEP 2410 247	A. Hayrapetyan *et al.*	(CMS Collab.)	REFID=63133
KUMAR	24	PR D109 032007	D. Kumar *et al.*	(BELLE Collab.)	REFID=62771
AAD	23BY	JHEP 2309 199	G. Aad *et al.*	(ATLAS Collab.)	REFID=62534
AAIJ	23AD	PRL 131 091901	R. Aaij *et al.*	(LHCb Collab.)	REFID=62327
AAIJ	23AP	JHEP 2307 084	R. Aaij *et al.*	(LHCb Collab.)	REFID=62412
AAIJ	23AT	PRL 131 171802	R. Aaij *et al.*	(LHCb Collab.)	REFID=62457
AAIJ	23AY	JHEP 2310 106	R. Aaij *et al.*	(LHCb Collab.)	REFID=62541
AAIJ	23AZ	JHEP 2310 123	R. Aaij *et al.*	(LHCb Collab.)	REFID=62542
AAIJ	23G	JHEP 2306 073	R. Aaij *et al.*	(LHCb Collab.)	REFID=62129
AAIJ	23J	JHEP 2307 119	R. Aaij *et al.*	(LHCb Collab.)	REFID=62146
AAIJ	23P	EPJ C83 629	R. Aaij *et al.*	(LHCb Collab.)	REFID=62176
AAIJ	23T	PR D108 012007	R. Aaij *et al.*	(LHCb Collab.)	REFID=62291
AAIJ	23Y	PR D108 012021	R. Aaij *et al.*	(LHCb Collab.)	REFID=62301
BORAH	23	PR D107 L051101	J. Borah *et al.*	(BELLE Collab.)	REFID=62254
NAYAK	23	JHEP 2308 178	M. Nayak *et al.*	(BELLE Collab.)	REFID=62373
TUMASYAN	23A	PL B842 137955	A. Tumasyan *et al.*	(CMS Collab.)	REFID=62102

ZHUKOVA	23	JHEP 2308 131	V. Zhukova *et al.*	(BELLE Collab.)	REFID=62312
AAIJ	22	PRL 128 041801	R. Aaij *et al.*	(LHCb Collab.)	REFID=61624
Also		PR D105 012010	R. Aaij *et al.*	(LHCb Collab.)	REFID=61625
AAIJ	22B	NATP 18 1	R. Aaij *et al.*	(LHCb Collab.)	REFID=61626
AAIJ	22N	PR D105 072005	R. Aaij *et al.*	(LHCb Collab.)	REFID=61737
AAIJ	22Q	JHEP 2203 109	R. Aaij *et al.*	(LHCb Collab.)	REFID=61780
BHUYAN	22	PR D105 012007	B. Bhuyan *et al.*	(BELLE Collab.)	REFID=61543
PANG	22	PR D106 L051103	T. Pang *et al.*	(BELLE Collab.)	REFID=61937
TUMASYAN	22AI	EPJ C82 499	A. Tumasyan *et al.*	(CMS Collab.)	REFID=61833
WANG	22	PR D105 012004	B. Wang *et al.*	(BELLE Collab.)	REFID=61593
AAD	21AE	EPJ C81 342	G. Aad *et al.*	(ATLAS Collab.)	REFID=61332
AAIJ	21AG	PRL 127 151801	R. Aaij *et al.*	(LHCb Collab.)	REFID=61499
AAIJ	21AK	JHEP 2111 043	R. Aaij *et al.*	(LHCb Collab.)	REFID=61564
AAIJ	21AN	EPJ C81 1026	R. Aaij *et al.*	(LHCb Collab.)	REFID=61597
AAIJ	21C	JHEP 2102 024	R. Aaij *et al.*	(LHCb Collab.)	REFID=61124
AAIJ	21G	PRL 126 081804	R. Aaij *et al.*	(LHCb Collab.)	REFID=61165
AAIJ	21M	JHEP 2103 137	R. Aaij *et al.*	(LHCb Collab.)	REFID=61288
AAIJ	21N	JHEP 2103 099	R. Aaij *et al.*	(LHCb Collab.)	REFID=61289
AAIJ	21O	JHEP 2103 075	R. Aaij *et al.*	(LHCb Collab.)	REFID=61290
AAIJ	21S	JHEP 2106 177	R. Aaij *et al.*	(LHCb Collab.)	REFID=61307
AAIJ	21Y	PR D104 032005	R. Aaij *et al.*	(LHCb Collab.)	REFID=61375
DUBEY	21	PR D104 012007	S. Dubey *et al.*	(BELLE Collab.)	REFID=61360
NISAR	21	PR D104 L031101	N.K. Nisar *et al.*	(BELLE Collab.)	REFID=61371
SIRUNYAN	21E	PL B816 136188	A.M. Sirunyan *et al.*	(CMS Collab.)	REFID=61061
AAIJ	20AW	JHEP 2012 144	R. Aaij *et al.*	(LHCb Collab.)	REFID=61003
AAIJ	20E	PR D101 072004	R. Aaij *et al.*	(LHCb Collab.)	REFID=60289
AAIJ	20F	PR D102 012011	R. Aaij *et al.*	(LHCb Collab.)	REFID=60339
AAIJ	20W	PRL 124 211802	R. Aaij *et al.*	(LHCb Collab.)	REFID=60562
PDG	20	PTEP 2020 083C01	P.A. Zyla *et al.*	(PDG Collab.)	REFID=60676
SIRUNYAN	20AG	JHEP 2004 188	A.M. Sirunyan *et al.*	(CMS Collab.)	REFID=60490
SIRUNYAN	20BB	PRL 125 152001	A.M. Sirunyan *et al.*	(CMS Collab.)	REFID=60688
AABOUD	19L	JHEP 1904 098	M. Aaboud *et al.*	(ATLAS Collab.)	REFID=59640
AAIJ	19AE	PRL 123 081802	R. Aaij *et al.*	(LHCb Collab.)	REFID=59924
AAIJ	19AF	PL B797 134789	R. Aaij *et al.*	(LHCb Collab.)	REFID=59932
AAIJ	19AK	PRL 123 211801	R. Aaij *et al.*	(LHCb Collab.)	REFID=60068
AAIJ	19AP	JHEP 1912 155	R. Aaij *et al.*	(LHCb Collab.)	REFID=60103
AAIJ	19K	JHEP 1906 114	R. Aaij *et al.*	(LHCb Collab.)	REFID=59693
AAIJ	19L	JHEP 1907 032	R. Aaij *et al.*	(LHCb Collab.)	REFID=59696
AAIJ	19Q	EPJ C79 706	R. Aaij *et al.*	(LHCb Collab.)	REFID=59738
Also		EPJ C80 601 (errat.)	R. Aaij *et al.*	(LHCb Collab.)	REFID=60445
AAIJ	19U	PRL 122 191804	R. Aaij *et al.*	(LHCb Collab.)	REFID=59783
AAIJ	18AB	JHEP 1807 020	R. Aaij *et al.*	(LHCb Collab.)	REFID=59133
AAIJ	18AC	JHEP 1808 191	R. Aaij *et al.*	(LHCb Collab.)	REFID=59136
AAIJ	18AY	PR D98 071103	R. Aaij *et al.*	(LHCb Collab.)	REFID=59452
AAIJ	18AZ	PR D98 072006	R. Aaij *et al.*	(LHCb Collab.)	REFID=59457
AAIJ	18O	PR D98 032004	R. Aaij *et al.*	(LHCb Collab.)	REFID=58973
AAIJ	18S	JHEP 1803 140	R. Aaij *et al.*	(LHCb Collab.)	REFID=59085
AAIJ	18T	JHEP 1803 078	R. Aaij *et al.*	(LHCb Collab.)	REFID=59088
AAIJ	18U	JHEP 1803 059	R. Aaij *et al.*	(LHCb Collab.)	REFID=59090
SIRUNYAN	18BY	EPJ C78 457	A.M. Sirunyan *et al.*	(CMS Collab.)	REFID=59185
AAIJ	17A	PR D95 012006	R. Aaij *et al.*	(LHCb Collab.)	REFID=57640
AAIJ	17AI	PRL 118 191801	R. Aaij *et al.*	(LHCb Collab.)	REFID=57928
AAIJ	17AJ	PRL 118 251802	R. Aaij *et al.*	(LHCb Collab.)	REFID=57938
AAIJ	17AL	PRL 119 041802	R. Aaij *et al.*	(LHCb Collab.)	REFID=57946
AAIJ	17AN	PRL 119 101801	R. Aaij *et al.*	(LHCb Collab.)	REFID=57951
AAIJ	17B	PRL 118 021801	R. Aaij *et al.*	(LHCb Collab.)	REFID=57653
AAIJ	17BA	JHEP 1705 158	R. Aaij *et al.*	(LHCb Collab.)	REFID=58122
AAIJ	17BB	EPJ C77 609	R. Aaij *et al.*	(LHCb Collab.)	REFID=58191
AAIJ	17BD	PR D96 051103	R. Aaij *et al.*	(LHCb Collab.)	REFID=58214
AAIJ	17BF	PL B774 139	R. Aaij *et al.*	(LHCb Collab.)	REFID=58252
AAIJ	17BJ	PRL 119 232001	R. Aaij *et al.*	(LHCb Collab.)	REFID=58281
AAIJ	17BP	JHEP 1711 027	R. Aaij *et al.*	(LHCb Collab.)	REFID=58347
AAIJ	17G	PRL 118 081801	R. Aaij *et al.*	(LHCb Collab.)	REFID=57757
AAIJ	17N	JHEP 1703 001	R. Aaij *et al.*	(LHCb Collab.)	REFID=57797
AAIJ	17U	JHEP 1707 021	R. Aaij *et al.*	(LHCb Collab.)	REFID=57822
AAIJ	17V	JHEP 1708 037	R. Aaij *et al.*	(LHCb Collab.)	REFID=57828
AABOUD	16L	EPJ C76 513	M. Aaboud *et al.*	(ATLAS Collab.)	REFID=57469
AAD	16AP	JHEP 1608 147	G. Aad *et al.*	(ATLAS Collab.)	REFID=57350
AAIJ	16	JHEP 1601 012	R. Aaij *et al.*	(LHCb Collab.)	REFID=57025
AAIJ	16AK	PL B762 253	R. Aaij *et al.*	(LHCb Collab.)	REFID=57573
AAIJ	16AL	PL B762 484	R. Aaij *et al.*	(LHCb Collab.)	REFID=57577
AAIJ	16C	PRL 116 161802	R. Aaij *et al.*	(LHCb Collab.)	REFID=57188
AAIJ	16E	PRL 116 241601	R. Aaij *et al.*	(LHCb Collab.)	REFID=57191
AAIJ	16G	PRL 117 061803	R. Aaij *et al.*	(LHCb Collab.)	REFID=57199
AAIJ	16L	PL B760 117	R. Aaij *et al.*	(LHCb Collab.)	REFID=57241
AAIJ	16P	PR D93 092008	R. Aaij *et al.*	(LHCb Collab.)	REFID=57284
AAIJ	16U	JHEP 1603 040	R. Aaij *et al.*	(LHCb Collab.)	REFID=57321
ABAZOV	16C	PR D94 012001	V.M. Abazov *et al.*	(D0 Collab.)	REFID=57305
KHACHATRY...	16Q	PL B756 84	V. Khachatryan *et al.*	(CMS Collab.)	REFID=57212
KHACHATRY...	16S	PL B757 97	V. Khachatryan *et al.*	(CMS Collab.)	REFID=57215
PAL	16	PRL 116 161801	B. Pal *et al.*	(BELLE Collab.)	REFID=57187
AAIJ	15AC	JHEP 1505 019	R. Aaij *et al.*	(LHCb Collab.)	REFID=56629
AAIJ	15AD	JHEP 1506 130	R. Aaij *et al.*	(LHCb Collab.)	REFID=56630
AAIJ	15AF	JHEP 1507 166	R. Aaij *et al.*	(LHCb Collab.)	REFID=56639
AAIJ	15AG	JHEP 1508 005	R. Aaij *et al.*	(LHCb Collab.)	REFID=56640
AAIJ	15AL	JHEP 1506 131	R. Aaji *et al.*	(LHCb Collab.)	REFID=56705
AAIJ	15AQ	JHEP 1509 179	R. Aaij *et al.*	(LHCb Collab.)	REFID=56854
AAIJ	15AS	JHEP 1510 053	R. Aaij *et al.*	(LHCb Collab.)	REFID=56857
AAIJ	15AV	JHEP 1511 082	R. Aaij *et al.*	(LHCb Collab.)	REFID=56867
AAIJ	15BB	PR D92 112002	R. Aaij *et al.*	(LHCb Collab.)	REFID=57010
AAIJ	15D	JHEP 1501 024	R. Aaij *et al.*	(LHCb Collab.)	REFID=56299
AAIJ	15I	PRL 114 041801	R. Aaij *et al.*	(LHCb Collab.)	REFID=56377
AAIJ	15K	PL B741 1	R. Aaij *et al.*	(LHCb Collab.)	REFID=56383
AAIJ	15O	PRL 115 051801	R. Aaij *et al.*	(LHCb Collab.)	REFID=56483
AAIJ	15S	PL B743 46	R. Aaij *et al.*	(LHCb Collab.)	REFID=56499
AAIJ	15U	PL B747 484	R. Aaij *et al.*	(LHCb Collab.)	REFID=56519
ABAZOV	15A	PRL 114 062001	V.M. Abazov *et al.*	(D0 Collab.)	REFID=56380
ABAZOV	15L	PRL 115 161601	V.M. Abazov *et al.*	(D0 Collab.)	REFID=56921
DUTTA	15	PR D91 011101	D. Dutta *et al.*	(BELLE Collab.)	REFID=56291

KHACHATRY...	15BE	NAT 522 68	V. Khachatryan *et al.*	(CMS and LHCb Collab.)	REFID=56946
OSWALD	15	PR D92 072013	C. Oswald *et al.*	(BELLE Collab.)	REFID=56898
AAD	14U	PR D90 052007	G. Aad *et al.*	(ATLAS Collab.)	REFID=55883
AAIJ	14AA	PRL 112 202001	R. Aaij *et al.*	(LHCb Collab.)	REFID=55843
AAIJ	14AE	PR D90 052011	R. Aaij *et al.*	(LHCb Collab.)	REFID=55889
AAIJ	14AX	PRL 113 172001	R. Aaij *et al.*	(LHCb Collab.)	REFID=56111
AAIJ	14AY	PRL 113 211801	R. Aaij *et al.*	(LHCb Collab.)	REFID=56119
AAIJ	14BF	JHEP 1411 060	R. Aaij *et al.*	(LHCb Collab.)	REFID=56197
AAIJ	14BH	PR D90 072003	R. Aaij *et al.*	(LHCb Collab.)	REFID=56208
AAIJ	14BM	NJP 16 123001	R. Aaij *et al.*	(LHCb Collab.)	REFID=56322
AAIJ	14BN	PR D90 112002	R. Aaij *et al.*	(LHCb Collab.)	REFID=56328
AAIJ	14BP	PL B739 218	R. Aaij *et al.*	(LHCb Collab.)	REFID=56336
AAIJ	14BR	PR D89 092006	R. Aaij *et al.*	(LHCb Collab.)	REFID=56035
AAIJ	14D	PL B728 607	R. Aaij *et al.*	(LHCb Collab.)	REFID=55631
AAIJ	14E	JHEP 1404 114	R. Aaij *et al.*	(LHCb Collab.)	REFID=55689
AAIJ	14F	PRL 112 111802	R. Aaij *et al.*	(LHCb Collab.)	REFID=55692
AAIJ	14L	JHEP 1407 140	R. Aaij *et al.*	(LHCb Collab.)	REFID=55725
AAIJ	14R	PL B736 446	R. Aaij *et al.*	(LHCb Collab.)	REFID=55760
AAIJ	14S	PL B736 186	R. Aaij *et al.*	(LHCb Collab.)	REFID=55761
AAIJ	14Y	PRL 112 091802	R. Aaij *et al.*	(LHCb Collab.)	REFID=55837
AALTONEN	14P	PRL 113 242001	T. Aaltonen *et al.*	(CDF Collab.)	REFID=56259
ABAZOV	14	PR D89 012002	V.M. Abazov *et al.*	(D0 Collab.)	REFID=55621
PDG	14	CP C38 070001	K. Olive *et al.*	(PDG Collab.)	REFID=55687
AAIJ	13	NP B867 1	R. Aaij *et al.*	(LHCb Collab.)	REFID=54596
AAIJ	13A	NP B867 547	R. Aaij *et al.*	(LHCb Collab.)	REFID=54670
AAIJ	13AA	NP B871 403	R. Aaij *et al.*	(LHCb Collab.)	REFID=55062
AAIJ	13AB	NP B873 275	R. Aaij *et al.*	(LHCb Collab.)	REFID=55063
AAIJ	13AC	NP B874 663	R. Aaij *et al.*	(LHCb Collab.)	REFID=55064
AAIJ	13AL	PR D87 071101	R. Aaij *et al.*	(LHCb Collab.)	REFID=55135
AAIJ	13AN	PR D87 072004	R. Aaij *et al.*	(LHCb Collab.)	REFID=55137
AAIJ	13AP	PR D87 092007	R. Aaij *et al.*	(LHCb Collab.)	REFID=55150
AAIJ	13AQ	PR D87 112009	R. Aaij *et al.*	(LHCb Collab.)	REFID=55158
AAIJ	13AR	PR D87 112010	R. Aaij *et al.*	(LHCb Collab.)	REFID=55159
AAIJ	13AW	PRL 110 211801	R. Aaij *et al.*	(LHCb Collab.)	REFID=55207
AAIJ	13AX	PRL 110 221601	R. Aaij *et al.*	(LHCb Collab.)	REFID=55208
AAIJ	13AY	PRL 110 241802	R. Aaij *et al.*	(LHCb Collab.)	REFID=55209
AAIJ	13B	PRL 110 021801	R. Aaij *et al.*	(LHCb Collab.)	REFID=54767
AAIJ	13BA	PRL 111 101805	R. Aaij *et al.*	(LHCb Collab.)	REFID=55227
AAIJ	13BI	NJP 15 053021	R. Aaij *et al.*	(LHCb Collab.)	REFID=55272
AAIJ	13BM	PRL 111 141801	R. Aaij *et al.*	(LHCb Collab.)	REFID=55413
AAIJ	13BO	JHEP 1310 183	R. Aaij *et al.*	(LHCb Collab.)	REFID=55423
AAIJ	13BP	JHEP 1310 143	R. Aaij *et al.*	(LHCb Collab.)	REFID=55427
AAIJ	13BQ	JHEP 1310 005	R. Aaij *et al.*	(LHCb Collab.)	REFID=55429
AAIJ	13BW	JHEP 1311 092	R. Aaij *et al.*	(LHCb Collab.)	REFID=55476
AAIJ	13BX	PL B727 403	R. Aaij *et al.*	(LHCb Collab.)	REFID=55479
AAIJ	13CF	EPJ C73 2655	R. Aaij *et al.*	(LHCb Collab.)	REFID=55617
AAIJ	13L	JHEP 1303 067	R. Aaij *et al.*	(LHCb Collab.)	REFID=54950
AAIJ	13X	JHEP 1307 084	R. Aaij *et al.*	(LHCb Collab.)	REFID=55040
AAIJ	13Z	JHEP 1309 006	R. Aaij *et al.*	(LHCb Collab.)	REFID=55048
AALTONEN	13F	PR D87 072003	T. Aaltonen *et al.*	(CDF Collab.)	REFID=55142
ABAZOV	13	PRL 110 011801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=54799
ABAZOV	13C	PR D87 072006	V.M. Abazov *et al.*	(D0 Collab.)	REFID=55143
CHATRCHYAN	13AW	PRL 111 101804	S. Chatrchyan *et al.*	(CMS Collab.)	REFID=55225
ESEN	13	PR D87 031101	S. Esen *et al.*	(BELLE Collab.)	REFID=54894
OSWALD	13	PR D87 072008	C. Oswald *et al.*	(BELLE Collab.)	REFID=55145
Also		PR D90 119901 (errat.)	C. Oswald *et al.*	(BELLE Collab.)	REFID=56283
SOLOVIEVA	13	PL B726 206	E. Solovieva *et al.*	(BELLE Collab.)	REFID=55099
THORNE	13	PR D88 114006	F. Thorne *et al.*	(BELLE Collab.)	REFID=55610
AAD	12AE	PL B713 387	G. Aad *et al.*	(ATLAS Collab.)	REFID=54194
AAD	12CV	JHEP 1212 072	G. Aad *et al.*	(ATLAS Collab.)	REFID=54785
AAIJ	12	PL B707 349	R. Aaij *et al.*	(LHCb Collab.)	REFID=53982
AAIJ	12A	PL B708 55	R. Aaij *et al.*	(LHCb Collab.)	REFID=54033
AAIJ	12AE	PR D85 112013	R. Aaij *et al.*	(LHCb Collab.)	REFID=54374
AAIJ	12AG	JHEP 1206 115	R. Aaij *et al.*	(LHCb Collab.)	REFID=54471
AAIJ	12AM	PRL 109 131801	R. Aaij *et al.*	(LHCb Collab.)	REFID=54590
AAIJ	12AN	PRL 109 152002	R. Aaij *et al.*	(LHCb Collab.)	REFID=54591
AAIJ	12AO	PR D86 052006	R. Aaij *et al.*	(LHCb Collab.)	REFID=54592
AAIJ	12AP	PR D86 071102	R. Aaij *et al.*	(LHCb Collab.)	REFID=54593
AAIJ	12AR	JHEP 1210 037	R. Aaij *et al.*	(LHCb Collab.)	REFID=54595
AAIJ	12AX	PR D86 112005	R. Aaij *et al.*	(LHCb Collab.)	REFID=54765
AAIJ	12B	PL B707 497	R. Aaij *et al.*	(LHCb Collab.)	REFID=54034
AAIJ	12D	PRL 108 101803	R. Aaij *et al.*	(LHCb Collab.)	REFID=54036
AAIJ	12E	PL B708 241	R. Aaij *et al.*	(LHCb Collab.)	REFID=54043
AAIJ	12F	PL B709 50	R. Aaij *et al.*	(LHCb Collab.)	REFID=54044
AAIJ	12I	PL B709 177	R. Aaij *et al.*	(LHCb Collab.)	REFID=54061
AAIJ	12L	EPJ C72 2118	R. Aaij *et al.*	(LHCb Collab.)	REFID=54136
AAIJ	12O	PL B713 172	R. Aaij *et al.*	(LHCb Collab.)	REFID=54188
AAIJ	12P	PL B713 369	R. Aaij *et al.*	(LHCb Collab.)	REFID=54189
AAIJ	12Q	PL B713 378	R. Aaij *et al.*	(LHCb Collab.)	REFID=54190
AAIJ	12R	PL B716 393	R. Aaij *et al.*	(LHCb Collab.)	REFID=54191
AAIJ	12S	PRL 108 151801	R. Aaij *et al.*	(LHCb Collab.)	REFID=54213
AAIJ	12V	PRL 108 201601	R. Aaij *et al.*	(LHCb Collab.)	REFID=54216
AAIJ	12W	PRL 108 231801	R. Aaij *et al.*	(LHCb Collab.)	REFID=54217
AALTONEN	12AJ	PRL 109 171802	T. Aaltonen *et al.*	(CDF Collab.)	REFID=54598
AALTONEN	12C	PRL 108 201801	T. Aaltonen *et al.*	(CDF Collab.)	REFID=54065
AALTONEN	12D	PR D85 072002	T. Aaltonen *et al.*	(CDF Collab.)	REFID=54070
AALTONEN	12L	PRL 108 211803	T. Aaltonen *et al.*	(CDF Collab.)	REFID=54241
ABAZOV	12AF	PR D86 092011	V.M. Abazov *et al.*	(D0 Collab.)	REFID=54702
ABAZOV	12C	PR D85 011103	V.M. Abazov *et al.*	(D0 Collab.)	REFID=54013
ABAZOV	12D	PR D85 032006	V.M. Abazov *et al.*	(D0 Collab.)	REFID=54062
CHATRCHYAN	12A	JHEP 1204 033	S. Chatrchyan *et al.*	(CMS Collab.)	REFID=54060
LEES	12A	PR D85 011101	J.P. Lees *et al.*	(BABAR Collab.)	REFID=53993
LI	12	PRL 108 181808	J. Li *et al.*	(BELLE Collab.)	REFID=54116
PDG	12	PR D86 010001	J. Beringer *et al.*	(PDG Collab.)	REFID=54066
AAIJ	11	PL B698 115	R. Aaij *et al.*	(LHCb Collab.)	REFID=53671

AAIJ	11A	PL B698 14	R. Aaij *et al.*	(LHCb Collab.)	REFID=16665
AAIJ	11B	PL B699 330	R. Aaij *et al.*	(LHCb Collab.)	REFID=16667
AAIJ	11D	PL B706 32	R. Aaij	(LHCb Collab.)	REFID=53847
AAIJ	11E	PR D84 092001	R. Aaij *et al.*	(LHCb Collab.)	REFID=53856
Also		PR D85 039904 (errat.)	R. Aaij *et al.*	(LHCb Collab.)	REFID=54371
AALTONEN	11A	PR D83 052012	T. Aaltonen *et al.*	(CDF Collab.)	REFID=53675
AALTONEN	11AB	PR D84 052012	T. Aaltonen *et al.*	(CDF Collab.)	REFID=53799
AALTONEN	11AG	PRL 107 191801	T. Aaltonen *et al.*	(CDF Collab.)	REFID=53834
Also		PRL 107 239903 (errat.)	T. Aaltonen *et al.*	(CDF Collab.)	REFID=54005
AALTONEN	11AI	PRL 107 201802	T. Aaltonen *et al.*	(CDF Collab.)	REFID=53836
AALTONEN	11AN	PRL 107 261802	T. Aaltonen *et al.*	(CDF Collab.)	REFID=53946
AALTONEN	11AP	PRL 107 272001	T. Aaltonen *et al.*	(CDF Collab.)	REFID=53983
AALTONEN	11L	PRL 106 161801	T. Aaltonen *et al.*	(CDF Collab.)	REFID=16443
AALTONEN	11N	PRL 106 181802	T. Aaltonen *et al.*	(CDF Collab.)	REFID=16447
ABAZOV	11U	PR D84 052007	V.M. Abazov *et al.*	(D0 Collab.)	REFID=53796
CHATRCHYAN	11T	PRL 107 191802	S. Chatrchyan *et al.*	(CMS Collab.)	REFID=53839
LI	11	PRL 106 121802	J. Li *et al.*	(BELLE Collab.)	REFID=53672
ABAZOV	10E	PR D82 012003	V.M. Abazov *et al.*	(D0 Collab.)	REFID=53317
ABAZOV	10H	PRL 105 081801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=53366
Also		PR D82 032001	V.M. Abazov *et al.*	(D0 Collab.)	REFID=53365
ABAZOV	10S	PL B693 539	V.M. Abazov *et al.*	(D0 Collab.)	REFID=53481
ESEN	10	PRL 105 201802	S. Esen *et al.*	(BELLE Collab.)	REFID=53462
LOUVOT	10	PRL 104 231801	R. LOUVOT *et al.*	(BELLE Collab.)	REFID=53334
PENG	10	PR D82 072007	C.-C. Peng *et al.*	(BELLE Collab.)	REFID=53470
AALTONEN	09AQ	PRL 103 191802	T. Aaltonen *et al.*	(CDF Collab.)	REFID=53063
AALTONEN	09B	PR D79 011104	T. Aaltonen *et al.*	(CDF Collab.)	REFID=52686
AALTONEN	09C	PRL 103 031801	T. Aaltonen *et al.*	(CDF Collab.)	REFID=52698
AALTONEN	09P	PRL 102 201801	T. Aaltonen *et al.*	(CDF Collab.)	REFID=52855
ABAZOV	09E	PRL 102 032001	V.M. Abazov *et al.*	(D0 Collab.)	REFID=52650
ABAZOV	09G	PRL 102 051801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=52652
ABAZOV	09I	PRL 102 091801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=52703
ABAZOV	09Y	PR D79 111102	V.M. Abazov *et al.*	(D0 Collab.)	REFID=52939
LOUVOT	09	PRL 102 021801	R. Louvot *et al.*	(BELLE Collab.)	REFID=52646
AALTONEN	08F	PRL 100 021803	T. Aaltonen *et al.*	(CDF Collab.)	REFID=52227
AALTONEN	08G	PRL 100 161802	T. Aaltonen *et al.*	(CDF Collab.)	REFID=52228
AALTONEN	08J	PRL 100 121803	T. Aaltonen *et al.*	(CDF Collab.)	REFID=52234
ABAZOV	08AM	PRL 101 241801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=52604
WICHT	08A	PRL 100 121801	J. Wicht *et al.*	(BELLE Collab.)	REFID=52436
ABAZOV	07	PRL 98 121801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=51664
ABAZOV	07A	PRL 98 151801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=51673
ABAZOV	07N	PR D76 057101	V.M. Abazov *et al.*	(D0 Collab.)	REFID=51936
ABAZOV	07Y	PRL 99 241801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=52091
ABULENCIA	07C	PRL 98 061802	A. Abulencia *et al.*	(CDF Collab.)	REFID=51674
DRUTSKOY	07	PRL 98 052001	A. Drutskoy *et al.*	(BELLE Collab.)	REFID=51621
DRUTSKOY	07A	PR D76 012002	A. Drutskoy *et al.*	(BELLE Collab.)	REFID=51852
ABAZOV	06B	PRL 97 021802	V.M. Abazov *et al.*	(D0 Collab.)	REFID=51245
ABAZOV	06G	PR D74 031107	V.M. Abazov *et al.*	(D0 Collab.)	REFID=51327
ABAZOV	06V	PRL 97 241801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=51583
ABULENCIA	06J	PRL 96 191801	A. Abulencia *et al.*	(CDF Collab.)	REFID=51210
ABULENCIA	06N	PRL 96 231801	A. Abulencia *et al.*	(CDF Collab.)	REFID=51236
ABULENCIA	06Q	PRL 97 062003	A. Abulencia *et al.*	(CDF Collab.)	REFID=51254
ABULENCIA,A	06D	PRL 97 211802	A. Abulencia *et al.*	(CDF Collab.)	REFID=51490
ABULENCIA,A	06G	PRL 97 242003	A. Abulencia *et al.*	(CDF Collab.)	REFID=51584
ACOSTA	06	PRL 96 202001	D. Acosta *et al.*	(CDF Collab.)	REFID=51231
ABAZOV	05B	PRL 94 042001	V.M. Abazov *et al.*	(D0 Collab.)	REFID=50492
ABAZOV	05W	PRL 95 171801	V.M. Abazov *et al.*	(D0 Collab.)	REFID=50929
ACOSTA	05	PRL 94 101803	D. Acosta *et al.*	(CDF Collab.)	REFID=50519
ACOSTA	05J	PRL 95 031801	D. Acosta *et al.*	(CDF Collab.)	REFID=50685
ABDALLAH	04A	PL B585 63	J. Abdallah *et al.*	(DELPHI Collab.)	REFID=49834
ABDALLAH	04J	EPJ C35 35	J. Abdallah *et al.*	(DELPHI Collab.)	REFID=49969
ABDALLAH	03B	EPJ C28 155	J. Abdallah *et al.*	(DELPHI Collab.)	REFID=49242
ABE	03	PR D67 012006	K. Abe *et al.*	(SLD Collab.)	REFID=49203
HEISTER	03E	EPJ C29 143	A. Heister *et al.*	(ALEPH Collab.)	REFID=49462
ABE	02V	PR D66 032009	K. Abe *et al.*	(SLD Collab.)	REFID=48907
ACOSTA	02D	PR D65 111101	D. Acosta *et al.*	(CDF Collab.)	REFID=48798
ACOSTA	02G	PR D66 112002	D. Acosta *et al.*	(CDF Collab.)	REFID=49132
ABBIENDI	01D	EPJ C19 241	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=48060
BARATE	01E	EPJ C19 213	R. Barate *et al.*	(ALEPH Collab.)	REFID=48135
ABE	00C	PR D62 071101	K. Abe *et al.*	(SLD Collab.)	REFID=47762
ABREU	00Y	EPJ C16 555	P. Abreu *et al.*	(DELPHI Collab.)	REFID=47784
ABREU,P	00G	EPJ C18 229	P. Abreu *et al.*	(DELPHI Collab.)	REFID=48030
AFFOLDER	00N	PRL 85 4668	T. Affolder *et al.*	(CDF Collab.)	REFID=47875
BARATE	00K	PL B486 286	R. Barate *et al.*	(ALEPH Collab.)	REFID=47721
ABBIENDI	99S	EPJ C11 587	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=47365
ABE	99D	PR D59 032004	F. Abe *et al.*	(CDF Collab.)	REFID=46705
ABE	99J	PRL 82 3576	F. Abe *et al.*	(CDF Collab.)	REFID=47003
BARATE	99J	EPJ C7 553	R. Barate *et al.*	(ALEPH Collab.)	REFID=47010
Also		EPJ C12 181 (errat.)	R. Barate *et al.*	(ALEPH Collab.)	REFID=47372
ABE	98B	PR D57 5382	F. Abe *et al.*	(CDF Collab.)	REFID=45880
ABE	98V	PRL 81 5742	F. Abe *et al.*	(CDF Collab.)	REFID=46697
ACCIARRI	98S	PL B438 417	M. Acciarri *et al.*	(L3 Collab.)	REFID=46503
ACKERSTAFF	98F	EPJ C2 407	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45873
ACKERSTAFF	98G	PL B426 161	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45875
BARATE	98C	EPJ C4 367	R. Barate *et al.*	(ALEPH Collab.)	REFID=45877
BARATE	98Q	EPJ C4 387	R. Barate *et al.*	(ALEPH Collab.)	REFID=46146
PDG	98	EPJ C3 1	C. Caso *et al.*	(PDG Collab.)	REFID=45838
ACCIARRI	97B	PL B391 474	M. Acciarri *et al.*	(L3 Collab.)	REFID=45248
ACCIARRI	97C	PL B391 481	M. Acciarri *et al.*	(L3 Collab.)	REFID=45249
ACKERSTAFF	97U	ZPHY C76 401	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45786
ACKERSTAFF	97V	ZPHY C76 417	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45787
ADAM	97	PL B414 382	W. Adam *et al.*	(DELPHI Collab.)	REFID=45799
ABE	96B	PR D53 3496	F. Abe *et al.*	(CDF Collab.)	REFID=44688
ABE	96N	PRL 77 1945	F. Abe *et al.*	(CDF Collab.)	REFID=44811

ABE	96Q	PR D54 6596	F. Abe *et al.*	(CDF Collab.)	REFID=44974
ABREU	96F	ZPHY C71 11	P. Abreu *et al.*	(DELPHI Collab.)	REFID=44704
ADAM	96D	ZPHY C72 207	W. Adam *et al.*	(DELPHI Collab.)	REFID=45276
BUSKULIC	96E	ZPHY C69 585	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44689
BUSKULIC	96M	PL B377 205	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44859
BUSKULIC	96V	PL B384 471	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44909
PDG	96	PR D54 1	R. M. Barnett *et al.*	(PDG Collab.)	REFID=44495
ABE	95R	PRL 74 4988	F. Abe *et al.*	(CDF Collab.)	REFID=44274
ABE	95Z	PRL 75 3068	F. Abe *et al.*	(CDF Collab.)	REFID=44490
ACCIARRI	95H	PL B363 127	M. Acciarri *et al.*	(L3 Collab.)	REFID=44544
ACCIARRI	95I	PL B363 137	M. Acciarri *et al.*	(L3 Collab.)	REFID=44545
AKERS	95G	PL B350 273	R. Akers *et al.*	(OPAL Collab.)	REFID=44272
AKERS	95J	ZPHY C66 555	R. Akers *et al.*	(OPAL Collab.)	REFID=44289
BUSKULIC	95J	PL B356 409	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44400
BUSKULIC	95O	PL B361 221	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44543
ABREU	94D	PL B324 500	P. Abreu *et al.*	(DELPHI Collab.)	REFID=43729
ABREU	94E	ZPHY C61 407	P. Abreu *et al.*	(DELPHI Collab.)	REFID=43739
Also		PL B289 199	P. Abreu *et al.*	(DELPHI Collab.)	REFID=42151
AKERS	94J	PL B337 196	R. Akers *et al.*	(OPAL Collab.)	REFID=44014
AKERS	94L	PL B337 393	R. Akers *et al.*	(OPAL Collab.)	REFID=44018
BUSKULIC	94B	PL B322 441	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=43741
BUSKULIC	94C	PL B322 275	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=43742
ABE	93F	PRL 71 1685	F. Abe *et al.*	(CDF Collab.)	REFID=43508
ACTON	93H	PL B312 501	P.D. Acton *et al.*	(OPAL Collab.)	REFID=43476
BUSKULIC	93G	PL B311 425	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=43439
ABREU	92M	PL B289 199	P. Abreu *et al.*	(DELPHI Collab.)	REFID=42151
ACTON	92N	PL B295 357	P.D. Acton *et al.*	(OPAL Collab.)	REFID=43139
BUSKULIC	92E	PL B294 145	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=42241
LEE-FRANZINI	90	PRL 65 2947	J. Lee-Franzini *et al.*	(CUSB II Collab.)	REFID=41398