Λ_b^0

$I(J^P) = 0(\frac{1}{2}^+)$ Status: ∗∗∗

In the quark model, a Λ_b^0 is an isospin-0 $u\,d\,b$ state. The lowest Λ_b^0 ought to have $J^P = 1/2^+$. None of I, J, or P have actually been measured.

Λ_b^0 MASS

$m_{\Lambda_b^0}$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
5619.60± 0.17 OUR AVERAGE				
5619.62± 0.16± 0.13		[1] AAIJ 17AM	LHCB	pp at 7, 8 TeV
5619.30± 0.34		[2] AAIJ 14AA	LHCB	pp at 7 TeV
5620.15± 0.31± 0.47		[3] AALTONEN 14B	CDF	$p\overline{p}$ at 1.96 TeV
5619.7 ± 0.7 ± 1.1		[3] AAD 13U	ATLS	pp at 7 TeV
5621 ± 4 ± 3		[4] ABE 97B	CDF	$p\overline{p}$ at 1.8 TeV
5668 ± 16 ± 8	4	[5] ABREU 96N	DLPH	$e^+e^- \to Z$
5614 ± 21 ± 4	4	[5] BUSKULIC 96L	ALEP	$e^+e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
5619.65± 0.17± 0.17		[6] AAIJ 16Y	LHCB	Repl. by AAIJ 17AM
5619.44± 0.13± 0.38		[3] AAIJ 13AV	LHCB	Repl. by AAIJ 17AM
5619.19± 0.70± 0.30		[3] AAIJ 12E	LHCB	Repl. by AAIJ 13AV
5619.7 ± 1.2 ± 1.2		[7] ACOSTA 06	CDF	Repl. by AALTONEN 14B
not seen		[8] ABE 93B	CDF	Repl. by ABE 97B
5640 ± 50 ±30	16	[9] ALBAJAR 91E	UA1	$p\overline{p}$ 630 GeV
5640 $^{+100}_{-210}$	52	BARI 91	SFM	$\Lambda_b^0 \to pD^0\pi^-$
5650 $^{+150}_{-200}$	90	BARI 91	SFM	$\Lambda_b^0 \to \Lambda_c^+\pi^+\pi^-\pi^-$

[1] Uses $\Lambda_b^0 \to \chi_{c1}pK^-$, $\Lambda_b^0 \to \chi_{c2}pK^-$, $\Lambda_b^0 \to J/\psi\Lambda$, $\Lambda_b^0 \to p\psi(2S)K^-$, $\Lambda_b^0 \to pJ/\psi\pi^+\pi^-K^-$, and $\Lambda_b^0 \to pJ/\psi K^-$ decays.

[2] Uses exclusively reconstructed final states $\Lambda_b^0 \to \Lambda_c^+D_s^-$, $\Lambda_c^+D^-$ and $\overline{B}^0 \to D^+D_s^-$ decays. The uncertainty includes both statistical and systematic contributions.

[3] Uses $\Lambda_b^0 \to J/\psi\Lambda$ fully reconstructed decays.

[4] ABE 97B observed 38 events with a background of 18 ± 1.6 events in the mass range 5.60–5.65 GeV/c^2, a significance of > 3.4 standard deviations.

[5] Uses 4 fully reconstructed Λ_b events.

[6] Uses $\Lambda_b^0 \to p\psi(2S)K^-$, $\Lambda_b^0 \to pJ/\psi\pi^+\pi^-K^-$, and $\Lambda_b^0 \to pJ/\psi K^-$ decays.

[7] Uses exclusively reconstructed final states containing a $J/\psi \to \mu^+\mu^-$ decays.

[8] ABE 93B states that, based on the signal claimed by ALBAJAR 91E, CDF should have found 30 ± 23 $\Lambda_b^0 \to J/\psi(1S)\Lambda$ events. Instead, CDF found not more than 2 events.

[9] ALBAJAR 91E claims 16 ± 5 events above a background of 9 ± 1 events, a significance of about 5 standard deviations.

$m_{\Lambda_b^0} - m_{B^0}$

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
339.2±1.4±0.1	[1] ACOSTA	06	CDF	$p\overline{p}$ at 1.96 TeV

[1] Uses exclusively reconstructed final states containing $J/\psi \to \mu^+\mu^-$ decays.

$m_{\Lambda_b^0} - m_{B^+}$

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
339.72±0.28 OUR AVERAGE				
339.72±0.24±0.18	[1] AAIJ	14AA	LHCB	pp at 7 TeV
339.71±0.71±0.09	[2] AAIJ	12E	LHCB	pp at 7 TeV

[1] Uses exclusively reconstructed final states $\Lambda_b^0 \to \Lambda_c^+ D_s^-$, $\Lambda_c^+ D^-$ and $\overline{B}^0 \to D^+ D_s^-$ decays.

[2] Uses exclusively reconstructed final states containing $J/\psi \to \mu^+\mu^-$ decays.

Λ_b^0 MEAN LIFE

See b-baryon Admixture section for data on b-baryon mean life average over species of b-baryon particles.

VALUE (10^{-12} s)	EVTS	DOCUMENT ID		TECN	COMMENT
1.471±0.009 OUR EVALUATION		(Produced by HFLAV)			
1.477±0.027±0.009		[1] SIRUNYAN	18BY	CMS	pp at 8 TeV
1.415±0.027±0.006		[2] AAIJ	14E	LHCB	pp at 7 TeV
1.479±0.009±0.010		[3] AAIJ	14U	LHCB	pp at 7, 8 TeV
1.565±0.035±0.020		[2] AALTONEN	14B	CDF	$p\overline{p}$ at 1.96 TeV
1.449±0.036±0.017		[2] AAD	13U	ATLS	pp at 7 TeV
1.503±0.052±0.031		[2] CHATRCHYAN	13AC	CMS	pp at 7 TeV
1.303±0.075±0.035		[2] ABAZOV	12U	D0	$p\overline{p}$ at 1.96 TeV
1.401±0.046±0.035		[4] AALTONEN	10B	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.482±0.018±0.012		[5] AAIJ	13BB	LHCB	Repl. by AAIJ 14U
1.537±0.045±0.014		[2] AALTONEN	11	CDF	Repl. by AALTONEN 14B
$1.218^{+0.130}_{-0.115}\pm0.042$		[2] ABAZOV	07S	D0	Repl. by ABAZOV 12U
$1.290^{+0.119}_{-0.110}{}^{+0.087}_{-0.091}$		[6] ABAZOV	07U	D0	$p\overline{p}$ at 1.96 TeV
$1.593^{+0.083}_{-0.078}\pm0.033$		[2] ABULENCIA	07A	CDF	Repl. by AALTONEN 11
$1.22^{+0.22}_{-0.18}\pm0.04$		[2] ABAZOV	05C	D0	Repl. by ABAZOV 07S
$1.11^{+0.19}_{-0.18}\pm0.05$		[7] ABREU	99W	DLPH	$e^+e^- \to Z$
$1.29^{+0.24}_{-0.22}\pm0.06$		[7] ACKERSTAFF	98G	OPAL	$e^+e^- \to Z$
1.21 ±0.11		[7] BARATE	98D	ALEP	$e^+e^- \to Z$
1.32 ±0.15 ±0.07		[8] ABE	96M	CDF	$p\overline{p}$ at 1.8 TeV
$1.19^{+0.21}_{-0.18}{}^{+0.07}_{-0.08}$		ABREU	96D	DLPH	Repl. by ABREU 99W

$1.27\ {}^{+0.35}_{-0.29}\ \pm 0.09$		ABREU	95S	DLPH	Repl. by ABREU 99W
$1.14\ {}^{+0.22}_{-0.19}\ \pm 0.07$	69	AKERS	95K	OPAL	Repl. by ACKERSTAFF 98G
$1.02\ {}^{+0.23}_{-0.18}\ \pm 0.06$	44	BUSKULIC	95L	ALEP	Repl. by BARATE 98D

[1] Measured using $\Lambda_b^0 \to J/\psi \Lambda$ decays.

[2] Measured mean life using fully reconstructed $\Lambda_b^0 \to J/\psi \Lambda$ decays.

[3] Used $\Lambda_b^0 \to J/\psi p K^-$ decays.

[4] Measured mean life using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ decays.

[5] Measured the lifetime ratio of decays $\Lambda_b^0 \to J/\psi p K^-$ to $B^0 \to J/\psi \pi^+ K^-$ to be $0.976 \pm 0.012 \pm 0.006$ with $\tau_{B^0} = 1.519 \pm 0.007$ ps.

[6] Measured using semileptonic decays $\Lambda_b^0 \to \Lambda_c^+ \mu \nu X$ and $\Lambda_c^+ \to K_S^0 p$.

[7] Measured using $\Lambda_c \ell^-$ and $\Lambda \ell^+ \ell^-$.

[8] Excess $\Lambda_c \ell^-$, decay lengths.

$\tau_{\Lambda_b^0} / \tau_{\overline{\Lambda}_b^0}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.940±0.035±0.006	[1] AAIJ	14E	LHCB	pp at 7 TeV

[1] Measured using $\Lambda_b^0 \to J/\psi \Lambda$ decays.

$\tau_{\Lambda_b^0} / \tau_{B^0}$ MEAN LIFE RATIO

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.964±0.007 OUR EVALUATION	(Produced by HFLAV)			
0.970±0.009 OUR AVERAGE	Error includes scale factor of 1.4. See the ideogram below.			
$0.978 \pm 0.018 \pm 0.006$	[1] SIRUNYAN	18BY	CMS	pp at 8 TeV
$0.929 \pm 0.018 \pm 0.004$	[1] AAIJ	14E	LHCB	pp at 7 TeV
$0.974 \pm 0.006 \pm 0.004$	[2] AAIJ	14U	LHCB	pp at 7, 8 TeV
$0.960 \pm 0.025 \pm 0.016$	[3] AAD	13U	ATLS	pp at 7 TeV
$0.864 \pm 0.052 \pm 0.033$	[4,5] ABAZOV	12U	D0	$p\overline{p}$ at 1.96 TeV
$1.020 \pm 0.030 \pm 0.008$	[4] AALTONEN	11	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.976 \pm 0.012 \pm 0.006$	[6] AAIJ	13BB	LHCB	Repl. by AAIJ 14U
$0.811\ {}^{+0.096}_{-0.087} \pm 0.034$	[4,5] ABAZOV	07S	D0	Repl. by ABAZOV 12U
1.041 ± 0.057	[7] ABULENCIA	07A	CDF	Repl. by AALTONEN 11
$0.87\ {}^{+0.17}_{-0.14}\ \pm 0.03$	[7] ABAZOV	05C	D0	Repl. by ABAZOV 07S

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

[2] Used $\Lambda_b^0 \to J/\psi p K^-$ and $B^0 \to J/\psi K^*(892)^0$ decays.

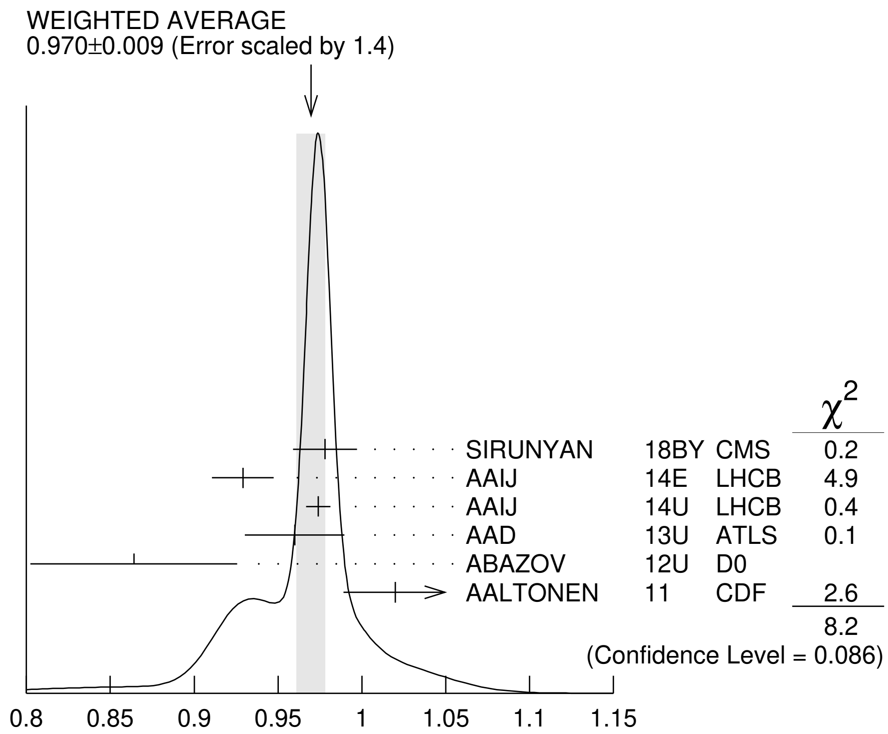
[3] Measured with $\Lambda_b^0 \to J/\psi(\mu^+ \mu^-)\ \Lambda^0(p \pi^-)$ decays.

[4] Uses fully reconstructed $\Lambda_b \to J/\psi \Lambda$ decays.

[5] Uses $B^0 \to J/\psi K_S^0$ decays for denominator.

[6] Measures $1/\tau_{\Lambda_b^0} - 1/\tau_{B^0}$ and uses $\tau_{B^0} = 1.519 \pm 0.007$ ps to extract lifetime ratio.

[7] Measured mean life ratio using fully reconstructed decays.



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

Λ_b^0 DECAY MODES

The branching fractions B(b-baryon $\rightarrow$ $\Lambda \ell^- \overline{\nu}_\ell$ anything) and B(Λ_b^0 $\rightarrow$ $\Lambda_c^+ \ell^- \overline{\nu}_\ell$ anything) are not pure measurements because the underlying measured products of these with B($b \rightarrow$ b-baryon) were used to determine B($b \rightarrow$ b-baryon), as described in the note "Production and Decay of b-Flavored Hadrons."

For inclusive branching fractions, *e.g.*, $\Lambda_b \rightarrow \overline{\Lambda}_c$ 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	$J/\psi(1S)\Lambda \times$ B($b \rightarrow \Lambda_b^0$)	$(5.8 \pm 0.8) \times 10^{-5}$	
Γ_2	$J/\psi(1S)\Lambda$		
Γ_3	$J/\psi(1S)\Lambda\phi$		
Γ_4	$\psi(2S)\Lambda$		
Γ_5	$p D^0 \pi^-$	$(6.2 \pm 0.6) \times 10^{-4}$	
Γ_6	$p D^+ \pi^- \pi^-$	$(2.7 \pm 0.4) \times 10^{-4}$	
Γ_7	$p D^*(2010)^+ \pi^- \pi^-$	$(5.2 \pm 1.0) \times 10^{-4}$	
Γ_8	$\Lambda_c(2860)^+ \pi^-$, $\Lambda_c^+ \rightarrow D^0 p$		

Γ_{9}	$\Lambda_c(2880)^+\pi^-$, $\Lambda_c^+ \to D^0 p$			
Γ_{10}	$\Lambda_c(2940)^+\pi^-$, $\Lambda_c^+ \to D^0 p$			
Γ_{11}	$p D^0 K^-$		$(4.5 \pm 0.8) \times 10^{-5}$	
Γ_{12}	$p D K^-$, $D \to K^-\pi^+$			
Γ_{13}	$p D K^-$, $D \to K^+\pi^-$			
Γ_{14}	$p J/\psi \pi^-$		$(2.6 ^{+0.5}_{-0.4}) \times 10^{-5}$	
Γ_{15}	$p\pi^- J/\psi$, $J/\psi \to \mu^+\mu^-$		$(1.6 \pm 0.8) \times 10^{-6}$	
Γ_{16}	$p J/\psi K^-$		$(3.2 ^{+0.6}_{-0.5}) \times 10^{-4}$	
Γ_{17}	$p \eta_c(1S) K^-$		$(1.06 \pm 0.26) \times 10^{-4}$	
Γ_{18}	$P_{c\overline{c}}(4312)^+ K^-$, $P_{c\overline{c}}^+ \to p\eta_c(1S)$		$< 2.5 \times 10^{-5}$	CL=95%
Γ_{19}	$P_{c\overline{c}}(4380)^+ K^-$, $P_{c\overline{c}}^+ \to p J/\psi$	[a]	$(2.7 \pm 1.4) \times 10^{-5}$	
Γ_{20}	$P_c(4450)^+ K^-$, $P_c \to p J/\psi$	[a]	$(1.3 \pm 0.4) \times 10^{-5}$	
Γ_{21}	$\chi_{c1}(1P) p K^-$		$(7.6 ^{+1.5}_{-1.3}) \times 10^{-5}$	
Γ_{22}	$\chi_{c1}(1P) p \pi^-$		$(5.0 ^{+1.3}_{-1.1}) \times 10^{-6}$	
Γ_{23}	$\chi_{c2}(1P) p K^-$		$(7.7 ^{+1.6}_{-1.4}) \times 10^{-5}$	
Γ_{24}	$\chi_{c2}(1P) p \pi^-$		$(4.8 \pm 1.9) \times 10^{-6}$	
Γ_{25}	$p J/\psi(1S) \pi^+\pi^- K^-$		$(6.6 ^{+1.3}_{-1.1}) \times 10^{-5}$	
Γ_{26}	$p \psi(2S) K^-$		$(6.6 ^{+1.2}_{-1.0}) \times 10^{-5}$	
Γ_{27}	$\chi_{c1}(3872) p K^-$		$(3.5 \pm 1.3) \times 10^{-5}$	
Γ_{28}	$\chi_{c1}(3872) \Lambda(1520)$		$(2.0 \pm 0.9) \times 10^{-5}$	
Γ_{29}	$\psi(2S) p \pi^-$		$(7.5 ^{+1.6}_{-1.4}) \times 10^{-6}$	
Γ_{30}	$p \overline{K}^0 \pi^-$		$(1.3 \pm 0.4) \times 10^{-5}$	
Γ_{31}	$p K^0 K^-$		$< 3.5 \times 10^{-6}$	CL=90%
Γ_{32}	$\Lambda_c^+ \pi^-$		$(4.9 \pm 0.4) \times 10^{-3}$	S=1.2
Γ_{33}	$\Lambda_c^+ K^-$		$(3.56 \pm 0.28) \times 10^{-4}$	S=1.2
Γ_{34}	$\Lambda_c^+ a_1(1260)^-$		seen	
Γ_{35}	$\Lambda_c^+ D^-$		$(4.6 \pm 0.6) \times 10^{-4}$	
Γ_{36}	$\Lambda_c^+ D_s^-$		(1.10 ± 0.10) %	
Γ_{37}	$\Lambda_c^+ \pi^+\pi^-\pi^-$		$(7.6 \pm 1.1) \times 10^{-3}$	S=1.1
Γ_{38}	$\Lambda_c(2595)^+\pi^-$, $\Lambda_c(2595)^+ \to \Lambda_c^+\pi^+\pi^-$		$(3.4 \pm 1.4) \times 10^{-4}$	
Γ_{39}	$\Lambda_c(2625)^+\pi^-$, $\Lambda_c(2625)^+ \to \Lambda_c^+\pi^+\pi^-$		$(3.3 \pm 1.3) \times 10^{-4}$	
Γ_{40}	$\Sigma_c(2455)^0\pi^+\pi^-$, $\Sigma_c^0 \to \Lambda_c^+\pi^-$		$(5.7 \pm 2.2) \times 10^{-4}$	

Γ_{41}	$\Sigma_c(2455)^{++}\pi^-\pi^-$, $\Sigma_c^{++} \to \Lambda_c^+\pi^+$		$(3.2 \pm 1.5) \times 10^{-4}$	
Γ_{42}	$\Lambda_c^+ K^+ K^- \pi^-$		$(1.02\pm0.11) \times 10^{-3}$	
Γ_{43}	$\Lambda_c^+ p\overline{p}\pi^-$		$(2.63\pm0.27) \times 10^{-4}$	
Γ_{44}	$\Sigma_c(2455)^0 p\overline{p}$, $\Sigma_c^0 \to \Lambda_c^+\pi^-$		$(2.3 \pm 0.5) \times 10^{-5}$	
Γ_{45}	$\Sigma_c(2520)^0 p\overline{p}$, $\Sigma_c(2520)^0 \to \Lambda_c^+\pi^-$		$(3.1 \pm 0.7) \times 10^{-5}$	
Γ_{46}	$\Lambda K^0 2\pi^+ 2\pi^-$			
Γ_{47}	$\Lambda_c^+ \ell^- \overline{\nu}_\ell$ anything	[b]	(10.9 ± 2.2) %	
Γ_{48}	$\Lambda_c^+ \ell^- \overline{\nu}_\ell$		$(6.2 {}^{+1.4}_{-1.3})$ %	
Γ_{49}	$\Lambda_c^+ \tau^- \overline{\nu}_\tau$		(1.9 ± 0.5) %	
Γ_{50}	$\Lambda_c^+ \pi^+\pi^- \ell^- \overline{\nu}_\ell$		(5.6 ± 3.1) %	
Γ_{51}	$\Lambda_c(2595)^+ \ell^- \overline{\nu}_\ell$		$(7.9 {}^{+4.0}_{-3.5}) \times 10^{-3}$	
Γ_{52}	$\Lambda_c(2625)^+ \ell^- \overline{\nu}_\ell$		$(1.3 {}^{+0.6}_{-0.5})$ %	
Γ_{53}	$\Sigma_c(2455)^0 \pi^+ \ell^- \overline{\nu}_\ell$			
Γ_{54}	$\Sigma_c(2455)^{++} \pi^- \ell^- \overline{\nu}_\ell$			
Γ_{55}	$p h^-$	[c]	$< 2.3 \times 10^{-5}$	CL=90%
Γ_{56}	$p\pi^-$		$(4.6 \pm 0.8) \times 10^{-6}$	
Γ_{57}	pK^-		$(5.5 \pm 1.0) \times 10^{-6}$	
Γ_{58}	pD_s^-		$(1.25\pm0.13) \times 10^{-5}$	
Γ_{59}	$p\mu^-\overline{\nu}_\mu$		$(4.1 \pm 1.0) \times 10^{-4}$	
Γ_{60}	$\Lambda\mu^+\mu^-$		$(1.08\pm0.28) \times 10^{-6}$	
Γ_{61}	$p\pi^-\mu^+\mu^-$		$(6.9 \pm 2.5) \times 10^{-8}$	
Γ_{62}	$pK^-e^+e^-$		$(3.1 \pm 0.6) \times 10^{-7}$	
Γ_{63}	$pK^-\mu^+\mu^-$		$(2.6 {}^{+0.5}_{-0.4}) \times 10^{-7}$	
Γ_{64}	$\Lambda(1520)^0\mu^+\mu^-$			
Γ_{65}	$\Lambda\gamma$		$(7.1 \pm 1.7) \times 10^{-6}$	
Γ_{66}	$\Lambda\eta$		$(9 {}^{+7}_{-5}) \times 10^{-6}$	
Γ_{67}	$\Lambda\eta'(958)$		$< 3.1 \times 10^{-6}$	CL=90%
Γ_{68}	$\Lambda\pi^+\pi^-$		$(4.6 \pm 1.9) \times 10^{-6}$	
Γ_{69}	$\Lambda K^+\pi^-$		$(5.6 \pm 1.2) \times 10^{-6}$	
Γ_{70}	ΛK^+K^-		$(1.60\pm0.21) \times 10^{-5}$	
Γ_{71}	$\Lambda\phi$		$(9.8 \pm 2.6) \times 10^{-6}$	
Γ_{72}	$p\pi^-\pi^+\pi^-$		$(2.08\pm0.21) \times 10^{-5}$	
Γ_{73}	$pK^-K^+\pi^-$		$(4.0 \pm 0.6) \times 10^{-6}$	
Γ_{74}	$pK^-\pi^+\pi^-$		$(5.0 \pm 0.5) \times 10^{-5}$	
Γ_{75}	$pK^-K^+K^-$		$(1.25\pm0.13) \times 10^{-5}$	

[a] P_c^+ is a pentaquark-charmonium state.

[b] Not a pure measurement. See note at head of Λ_b^0 Decay Modes.

[c] Here h^- means π^- or K^-.

FIT INFORMATION

An overall fit to 10 branching ratios uses 12 measurements to determine 6 parameters. The overall fit has a χ^2 = 10.8 for 6 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_{33}	92				
x_{37}	46	43			
x_{48}	13	12	6		
x_{56}	0	0	0	0	
x_{57}	0	0	0	0	82
	x_{32}	x_{33}	x_{37}	x_{48}	x_{56}

Λ_b^0 BRANCHING RATIOS

$\Gamma(J/\psi(1S)\Lambda \times B(b \to \Lambda_b^0))/\Gamma_{total}$ — Γ_1/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
5.8 ± 0.8 OUR AVERAGE					
6.01 ± 0.60 ± 0.58 ± 0.28		[1] ABAZOV	11O	D0	$p\overline{p}$ at 1.96 TeV
4.7 ± 2.3 ± 0.2		[2] ABE	97B	CDF	$p\overline{p}$ at 1.8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
180 ±60 ±90	16	ALBAJAR	91E	UA1	$p\overline{p}$ at 630 GeV

[1] ABAZOV 11O uses $B(B^0 \to J/\psi K_S^0) \times B(b \to B^0) = (1.74 \pm 0.08) \times 10^{-4}$ to obtain the result. The $(\pm 0.08) \times 10^{-4}$ uncertainty of this product is listed as the last uncertainty of the measurement, $(\pm 0.28) \times 10^{-5}$.

[2] ABE 97B reports $[B(\Lambda_b^0 \to J/\psi \Lambda) \times B(b \to \Lambda_b^0)]$ / $[B(B^0 \to J/\psi K_S^0) \times B(b \to B^0)] = 0.27 \pm 0.12 \pm 0.05$. We multiply by our best value $B(B^0 \to J/\psi K_S^0) \times B(b \to B^0) = (1.74 \pm 0.08) \times 10^{-4}$. Our first error is their experiment error and our second error is the systematic error from using our best value.

$\Gamma(\psi(2S)\Lambda)/\Gamma(J/\psi(1S)\Lambda)$ — Γ_4/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
0.508 ± 0.023 OUR AVERAGE				
0.513 ± 0.023 ± 0.019	[1] AAIJ	19F	LHCB	pp at 7, 8 TeV
0.50 ± 0.03 ± 0.02	[2] AAD	15CH	ATLS	pp at 8 TeV

[1] AAIJ 19F uses B($J/\psi \to \mu^+\mu^-$) = $(5.961 \pm 0.033) \times 10^{-2}$ and B($\psi(2S) \to e^+e^-$) = $(7.93 \pm 0.17) \times 10^{-3}$ from PDG 18 with assumption of lepton universality. AAIJ 19F reports this result as $0.513 \pm 0.023 \pm 0.016 \pm 0.011$, where the last uncertainty is the contribution due to the external input of branching fractions used in the analysis.

[2] AAD 15CH uses B($J/\psi \to \mu^+\mu^-$) = $(5.961 \pm 0.033) \times 10^{-2}$ and B($\psi(2S) \to \mu^+\mu^-$)= $(7.89 \pm 0.17) \times 10^{-3}$ from PDG 14 with assumption of lepton universality.

$\Gamma(J/\psi(1S)\Lambda\phi)/\Gamma(\psi(2S)\Lambda)$ — Γ_3/Γ_4

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
8.26±0.90±0.69	SIRUNYAN	20H	CMS	pp at 13 TeV

$\Gamma(pD^0\pi^-)/\Gamma_{total}$ — Γ_5/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	52	BARI	91	SFM	$D^0 \to K^-\pi^+$
seen		BASILE	81	SFM	$D^0 \to K^-\pi^+$

$\Gamma(pD^+\pi^-\pi^-)/\Gamma(\Lambda_c^+\pi^+\pi^-\pi^-)$ — Γ_6/Γ_{37}

VALUE (%)	DOCUMENT ID		TECN	COMMENT
3.56±0.18±0.17	[1] AAIJ	22R	LHCB	pp at 7 and 8 TeV

[1] AAIJ 22R reports $[\Gamma(\Lambda_b^0 \to pD^+\pi^-\pi^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^+\pi^-\pi^-)] \times [B(D^+ \to K^-2\pi^+)] / [B(\Lambda_c^+ \to pK^-\pi^+)] = 5.35 \pm 0.21 \pm 0.16$ % which we multiply or divide by our best values B($D^+ \to K^-2\pi^+$) = $(9.38 \pm 0.16) \times 10^{-2}$, B($\Lambda_c^+ \to pK^-\pi^+$) = $(6.24 \pm 0.28) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

$\Gamma(pD^*(2010)^+\pi^-\pi^-)/\Gamma(pD^+\pi^-\pi^-)$ — Γ_7/Γ_6

VALUE	DOCUMENT ID		TECN	COMMENT
1.90±0.19	[1] AAIJ	22R	LHCB	pp at 7 and 8 TeV

[1] AAIJ 22R uses partial reconstruction of $pD^+\pi^-\pi^-$ final state.

$\Gamma(\Lambda_c(2860)^+\pi^-,\ \Lambda_c^+ \to D^0p)/\Gamma(\Lambda_c(2880)^+\pi^-,\ \Lambda_c^+ \to D^0p)$ — Γ_8/Γ_9

VALUE	DOCUMENT ID		TECN	COMMENT
$4.54^{+0.51}_{-0.39}{}^{+0.21}_{-0.59}$	AAIJ	17S	LHCB	pp at 7, 8 TeV

$\Gamma(\Lambda_c(2940)^+\pi^-,\ \Lambda_c^+ \to D^0p)/\Gamma(\Lambda_c(2880)^+\pi^-,\ \Lambda_c^+ \to D^0p)$ — Γ_{10}/Γ_9

VALUE	DOCUMENT ID		TECN	COMMENT
$0.83^{+0.31}_{-0.10}{}^{+0.18}_{-0.43}$	AAIJ	17S	LHCB	pp at 7, 8 TeV

$\Gamma(pD^0K^-)/\Gamma(pD^0\pi^-)$ — Γ_{11}/Γ_5

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$7.3 \pm 0.8^{+0.5}_{-0.6}$	AAIJ	14H	LHCB	pp at 7 TeV

$\Gamma(pDK^-,\ D\to K^-\pi^+)/\Gamma(pDK^-,\ D\to K^+\pi^-)$ — Γ_{12}/Γ_{13}

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{7.1\pm0.8^{+0.4}_{-0.3}}$	[1] AAIJ	21AD	LHCB	pp at 7, 8, 13 TeV

[1] Measured in the full phase space.

$\Gamma(pJ/\psi\pi^-)/\Gamma(pJ/\psi K^-)$ — Γ_{14}/Γ_{16}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
8.24±0.25±0.42	AAIJ	14K	LHCB	pp at 7, 8 TeV

$\Gamma(pJ/\psi K^-)/\Gamma_{total}$ — Γ_{16}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
$\mathbf{3.17\pm0.04^{+0.57}_{-0.45}}$	[1] AAIJ	16A	LHCB	pp at 7, 8 TeV

[1] AAIJ 16A reported the measurement of $(3.17 \pm 0.04 \pm 0.07 \pm 0.34^{+0.45}_{-0.28}) \times 10^{-4}$ where the first uncertainty is statistical, the second is systematic, the third is due to the branching fraction of $B^0 \to J/\psi K^*(892)^0$, and the fourth is due to the knowledge of f_{Λ_b}/f_d. We combined in quadrature second to fourth uncertainties to a total systematic uncertainty.

$\Gamma(p\eta_c(1S)K^-)/\Gamma(pJ/\psi K^-)$ — Γ_{17}/Γ_{16}

VALUE	DOCUMENT ID		TECN	COMMENT
0.333±0.050±0.037	[1] AAIJ	20AK	LHCB	pp at 13 TeV

[1] AAIJ 20AK reported the measurement of 0.333 ± 0.050 ± 0.019 ± 0.032, where the last uncertainty is due uncertainties of the used branching fractions of $J/\psi \to p\overline{p}$ and $\eta_c \to p\overline{p}$ decays. We combined in quadrature the systematic uncertainties.

$\Gamma(P_{c\overline{c}}(4312)^+K^-,\ P^+_{c\overline{c}}\to p\eta_c(1S))/\Gamma(p\eta_c(1S)K^-)$ — Γ_{18}/Γ_{17}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.24	95	AAIJ	20AK	LHCB	pp at 13 TeV

$\Gamma(P_{c\overline{c}}(4380)^+K^-,\ P^+_{c\overline{c}}\to pJ/\psi)/\Gamma_{total}$ — Γ_{19}/Γ

P^+_c is a pentaquark-charmonium state.

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
$\mathbf{2.66\pm0.22^{+1.41}_{-1.38}}$	[1] AAIJ	16A	LHCB	pp at 7, 8 TeV

[1] AAIJ 16 total systematic includes the uncertainties on $f(P^+_c)$ and $B(\Lambda_b \to pJ/\psi K^-)$.

$\Gamma(P_c(4450)^+K^-,\ P_c\to pJ/\psi)/\Gamma_{total}$ — Γ_{20}/Γ

P^+_c is a pentaquark-charmonium state.

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.30\pm0.16^{+0.42}_{-0.39}}$	[1] AAIJ	16A	LHCB	pp at 7, 8 TeV

[1] AAIJ 16 total systematic includes the uncertainties on $f(P^+_c)$ and $B(\Lambda_b \to pJ/\psi K^-)$.

$\Gamma(\chi_{c1}(1P) p K^-)/\Gamma(p J/\psi K^-)$ Γ_{21}/Γ_{16}

VALUE	DOCUMENT ID		TECN	COMMENT
0.239±0.019±0.009	[1] AAIJ	17AM	LHCB	pp at 7, 8 TeV

[1] AAIJ 17AM reports $0.242 \pm 0.014 \pm 0.016$ from a measurement of $[\Gamma(\Lambda_b^0 \to \chi_{c1}(1P) p K^-)/\Gamma(\Lambda_b^0 \to p J/\psi K^-)] \times [B(\chi_{c1}(1P) \to \gamma J/\psi(1S))]$ assuming $B(\chi_{c1}(1P) \to \gamma J/\psi(1S)) = (33.9 \pm 1.2) \times 10^{-2}$, which we rescale to our best value $B(\chi_{c1}(1P) \to \gamma J/\psi(1S)) = (34.3 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\chi_{c1}(1P) p \pi^-)/\Gamma(\chi_{c1}(1P) p K^-)$ Γ_{22}/Γ_{21}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
6.59±1.01±0.22	AAIJ	21R	LHCB	pp at 13 TeV

$\Gamma(\chi_{c2}(1P) p K^-)/\Gamma(p J/\psi K^-)$ Γ_{23}/Γ_{16}

VALUE	DOCUMENT ID		TECN	COMMENT
0.244±0.024±0.009	[1] AAIJ	17AM	LHCB	pp at 7, 8 TeV

[1] AAIJ 17AM reports $0.248 \pm 0.02 \pm 0.017$ from a measurement of $[\Gamma(\Lambda_b^0 \to \chi_{c2}(1P) p K^-)/\Gamma(\Lambda_b^0 \to p J/\psi K^-)] \times [B(\chi_{c2}(1P) \to \gamma J/\psi(1S))]$ assuming $B(\chi_{c2}(1P) \to \gamma J/\psi(1S)) = (19.2 \pm 0.7) \times 10^{-2}$, which we rescale to our best value $B(\chi_{c2}(1P) \to \gamma J/\psi(1S)) = (19.5 \pm 0.8) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\chi_{c2}(1P) p K^-)/\Gamma(\chi_{c1}(1P) p K^-)$ Γ_{23}/Γ_{21}

VALUE	DOCUMENT ID		TECN	COMMENT
1.06±0.05±0.04±0.04	[1] AAIJ	21R	LHCB	pp at 13 TeV

[1] The first uncertainty is statistical, the second is systematic and the third is related to the uncertainties in the branching fractions of the $\chi_{cJ} \to J/\psi \gamma$ decays.

$\Gamma(\chi_{c2}(1P) p \pi^-)/\Gamma(\chi_{c1}(1P) p \pi^-)$ Γ_{24}/Γ_{22}

VALUE	DOCUMENT ID		TECN	COMMENT
0.95±0.30±0.04±0.04	[1] AAIJ	21R	LHCB	pp at 13 TeV

[1] Evidence for the $\Lambda_b^0 \to \chi_{c2} p \pi^-$ decay is obtained with a significance of 3.5 standard deviations. The first uncertainty is statistical, the second is systematic and the third is related to the uncertainties in the branching fractions of the $\chi_{cJ} \to J/\psi \gamma$ decays.

$\Gamma(p J/\psi(1S) \pi^+ \pi^- K^-)/\Gamma(p J/\psi K^-)$ Γ_{25}/Γ_{16}

VALUE	DOCUMENT ID		TECN	COMMENT
0.2086±0.0096±0.0134	[1] AAIJ	16Y	LHCB	pp at 7, 8 TeV

[1] Excludes $\psi(2S) \to J/\psi \pi^+ \pi^-$.

$\Gamma(p \psi(2S) K^-)/\Gamma(p J/\psi K^-)$ Γ_{26}/Γ_{16}

VALUE	DOCUMENT ID		TECN	COMMENT
0.2070±0.0076±0.0059	[1] AAIJ	16Y	LHCB	pp at 7, 8 TeV

[1] AAIJ 16Y reports a measurement of $0.2070 \pm 0.0076 \pm 0.0046 \pm 0.0037$ where the third uncertainty is due to the knowledge of J/ψ and $\psi(2S)$ branching fractions. We have combined both systematic uncertainties in quadrature.

$\Gamma(\chi_{c1}(3872)\Lambda(1520))/\Gamma(\chi_{c1}(3872)pK^-)$ — Γ_{28}/Γ_{27}

VALUE	DOCUMENT ID		TECN	COMMENT
0.58±0.15	AAIJ	19AN	LHCB	pp at 7, 8, 13 TeV

$\Gamma(\chi_{c1}(3872)pK^-)/\Gamma(p\psi(2S)K^-)$ — Γ_{27}/Γ_{26}

VALUE	DOCUMENT ID		TECN	COMMENT
0.53±0.11±0.14	[1] AAIJ	19AN	LHCB	pp at 7, 8, 13 TeV

[1] AAIJ 19AN reports $[\Gamma(\Lambda_b^0 \to \chi_{c1}(3872)pK^-)/\Gamma(\Lambda_b^0 \to p\psi(2S)K^-)] \times [B(\chi_{c1}(3872) \to \pi^+\pi^- J/\psi(1S))] / [B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)] = (5.4 \pm 1.1 \pm 0.2) \times 10^{-2}$ which we multiply or divide by our best values $B(\chi_{c1}(3872) \to \pi^+\pi^- J/\psi(1S)) = (3.5 \pm 0.9) \times 10^{-2}$, $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (34.69 \pm 0.34) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

$\Gamma(\psi(2S)p\pi^-)/\Gamma(p\psi(2S)K^-)$ — Γ_{29}/Γ_{26}

VALUE (%)	DOCUMENT ID		TECN	COMMENT
11.4±1.3±0.2	AAIJ	18AF	LHCB	pp at 7, 8, 13 TeV

$\Gamma(p\overline{K}^0\pi^-)/\Gamma_{\text{total}}$ — Γ_{30}/Γ

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
1.26±0.19±0.36	[1] AAIJ	14Q	LHCB	pp at 7 TeV

[1] Used the normalizing mode branching fraction value of $B(B^0 \to K^0\pi^+\pi^-) = (4.96 \pm 0.20) \times 10^{-5}$.

$\Gamma(pK^0K^-)/\Gamma_{\text{total}}$ — Γ_{31}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.5 \times 10^{-6}$	90	AAIJ	14Q	LHCB	pp at 7 TeV

$\Gamma(\Lambda_c^+\pi^-)/\Gamma_{\text{total}}$ — Γ_{32}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
4.9 ±0.4 OUR FIT Error includes scale factor of 1.2.					
4.8 ±0.5 OUR AVERAGE Error includes scale factor of 1.5.					
$4.60^{+0.31}_{-0.30}\pm0.14$		[1] AAIJ	14I	LHCB	pp at 7 TeV
5.97±0.28±0.81		[2] AAIJ	14Q	LHCB	pp at 7 TeV
8.8 ±2.8 ±1.5		[3] ABULENCIA	07B	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	3	ABREU	96N	DLPH	$\Lambda_c^+ \to pK^-\pi^+$
seen	4	BUSKULIC	96L	ALEP	$\Lambda_c^+ \to pK^-\pi^+$, $p\overline{K}^0$, $\Lambda\pi^+\pi^+\pi^-$

[1] AAIJ 14I reports $(4.30 \pm 0.03^{+0.12}_{-0.11} \pm 0.26 \pm 0.21) \times 10^{-3}$ from a measurement of $[\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^-)/\Gamma_{\text{total}}] \times [B(B^0 \to D^-\pi^+)]$ assuming $B(B^0 \to D^-\pi^+) = (2.68 \pm 0.13) \times 10^{-3}$, which we rescale to our best 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 value. Uses information on f_{baryon}/f_d from measurement in semileptonic decays by the same authors.

[2] Obtained using the branching fraction of $\Lambda_c^+ \to pK^-\pi^+$ decay.

[3] The result is obtained from ($f_{\text{baryon}}/f_{\text{d}}$) (B($\Lambda_b^0 \to \Lambda_c^+ \pi^-$)/B($\overline{B}^0 \to D^+ \pi^-$)) = $0.82 \pm 0.08 \pm 0.11 \pm 0.22$, assuming $f_{\text{baryon}}/f_{\text{d}} = 0.25 \pm 0.04$ and B($\overline{B}^0 \to D^+ \pi^-$) = $(2.68 \pm 0.13) \times 10^{-3}$.

$\Gamma(p D^0 \pi^-)/\Gamma(\Lambda_c^+ \pi^-)$ — Γ_5/Γ_{32}

VALUE	DOCUMENT ID		TECN	COMMENT
0.127±0.007±0.006	[1] AAIJ	14H	LHCB	pp at 7 TeV

[1] AAIJ 14H reports $[\Gamma(\Lambda_b^0 \to p D^0 \pi^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+ \pi^-)] \times [B(D^0 \to K^- \pi^+)]$ / $[B(\Lambda_c^+ \to p K^- \pi^+)] = (8.06 \pm 0.23 \pm 0.35) \times 10^{-2}$ which we multiply or divide by our best values B($D^0 \to K^- \pi^+$) = $(3.947 \pm 0.030) \times 10^{-2}$, B($\Lambda_c^+ \to p K^- \pi^+$) = $(6.24 \pm 0.28) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

$\Gamma(\Lambda_c^+ K^-)/\Gamma_{\text{total}}$ — Γ_{33}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
3.56±0.28 OUR FIT Error includes scale factor of 1.2.				
3.55±0.44±0.50	[1] AAIJ	14Q	LHCB	pp at 7 TeV

[1] Obtained using the branching fraction of $\Lambda_c^+ \to p K^- \pi^+$ decay.

$\Gamma(\Lambda_c^+ K^-)/\Gamma(\Lambda_c^+ \pi^-)$ — Γ_{33}/Γ_{32}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
7.31±0.22 OUR FIT				
7.31±0.16±0.16	AAIJ	14H	LHCB	pp at 7 TeV

$\Gamma(\Lambda_c^+ a_1(1260)^-)/\Gamma_{\text{total}}$ — Γ_{34}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	1	ABREU	96N	DLPH	$\Lambda_c^+ \to p K^- \pi^+$, $a_1^- \to \rho^0 \pi^- \to \pi^+ \pi^- \pi^-$

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

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.1±0.1	[1] AAIJ	14AA	LHCB	pp at 7 TeV

[1] Uses B($\overline{B}^0 \to D^+ D_s^-$) = $(7.2 \pm 0.8) \times 10^{-3}$ and their measured B($\Lambda_b^0 \to \Lambda_c^+ \pi^-$))/B($\overline{B}^0 \to D^+ \pi^-$) values.

$\Gamma(\Lambda_c^+ D^-)/\Gamma(\Lambda_c^+ D_s^-)$ — Γ_{35}/Γ_{36}

VALUE	DOCUMENT ID		TECN	COMMENT
0.042±0.003±0.003	AAIJ	14AA	LHCB	pp at 7 TeV

$\Gamma(\Lambda_c^+ \pi^+ \pi^- \pi^-)/\Gamma_{\text{total}}$ — Γ_{37}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
7.6±1.1 OUR FIT Error includes scale factor of 1.1.					
$14.8^{+3.8}_{-3.1}$±1.1		[1] AALTONEN	12A	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	90	BARI	91	SFM	$\Lambda_c^+ \to p K^- \pi^+$

[1] AALTONEN 12A reports $[\Gamma(\Lambda_b^0 \to \Lambda_c^+ \pi^+ \pi^- \pi^-)/\Gamma_{\rm total}] / [B(\Lambda_b^0 \to \Lambda_c^+ \pi^-)] = 3.04 \pm 0.33^{+0.70}_{-0.55}$ which we multiply by our best value $B(\Lambda_b^0 \to \Lambda_c^+ \pi^-) = (4.9 \pm 0.4) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Lambda_c^+ \pi^+ \pi^- \pi^-)/\Gamma(\Lambda_c^+ \pi^-)$ — Γ_{37}/Γ_{32}

VALUE	DOCUMENT ID		TECN	COMMENT
1.57±0.21 OUR FIT				
1.43±0.16±0.13	AAIJ	11E	LHCB	pp at 7 TeV

$\Gamma(\Lambda_c(2595)^+ \pi^-, \Lambda_c(2595)^+ \to \Lambda_c^+ \pi^+ \pi^-)/\Gamma(\Lambda_c^+ \pi^+ \pi^- \pi^-)$ — Γ_{38}/Γ_{37}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$4.4 \pm 1.7^{+0.6}_{-0.4}$	AAIJ	11E	LHCB	pp at 7 TeV

$\Gamma(\Lambda_c(2625)^+ \pi^-, \Lambda_c(2625)^+ \to \Lambda_c^+ \pi^+ \pi^-)/\Gamma(\Lambda_c^+ \pi^+ \pi^- \pi^-)$ — Γ_{39}/Γ_{37}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.3±1.5±0.4	AAIJ	11E	LHCB	pp at 7 TeV

$\Gamma(\Sigma_c(2455)^0 \pi^+ \pi^-, \Sigma_c^0 \to \Lambda_c^+ \pi^-)/\Gamma(\Lambda_c^+ \pi^+ \pi^- \pi^-)$ — Γ_{40}/Γ_{37}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
7.4±2.4±1.2	AAIJ	11E	LHCB	pp at 7 TeV

$\Gamma(\Sigma_c(2455)^{++} \pi^- \pi^-, \Sigma_c^{++} \to \Lambda_c^+ \pi^+)/\Gamma(\Lambda_c^+ \pi^+ \pi^- \pi^-)$ — Γ_{41}/Γ_{37}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.2±1.8±0.7	AAIJ	11E	LHCB	pp at 7 TeV

$\Gamma(\Lambda_c^+ K^+ K^- \pi^-)/\Gamma(\Lambda_c^+ D_s^-)$ — Γ_{42}/Γ_{36}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
9.26±0.29±0.53	[1] AAIJ	21B	LHCB	pp at 7 and 8 TeV

[1] AAIJ 21B systematic uncertainty includes the contribution from the $D_s^- \to K^+ K^- \pi^-$ branching fraction.

$\Gamma(\Lambda_c^+ p \overline{p} \pi^-)/\Gamma(\Lambda_c^+ \pi^-)$ — Γ_{43}/Γ_{32}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
5.40±0.23±0.32	AAIJ	18AW	LHCB	pp at 7 and 8 TeV

$\Gamma(\Sigma_c(2455)^0 p \overline{p}, \Sigma_c^0 \to \Lambda_c^+ \pi^-)/\Gamma(\Lambda_c^+ p \overline{p} \pi^-)$ — Γ_{44}/Γ_{43}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
8.9±1.5±0.6	AAIJ	18AW	LHCB	pp at 7 and 8 TeV

$\Gamma(\Sigma_c(2520)^0 p \overline{p}, \Sigma_c(2520)^0 \to \Lambda_c^+ \pi^-)/\Gamma(\Lambda_c^+ p \overline{p} \pi^-)$ — Γ_{45}/Γ_{43}

VALUE	DOCUMENT ID		TECN	COMMENT
0.119±0.020±0.014	AAIJ	18AW	LHCB	pp at 7 and 8 TeV

$\Gamma(\Lambda K^0 2\pi^+ 2\pi^-)/\Gamma_{total}$ Γ_{46}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	4	[1] ARENTON	86	FMPS	$\Lambda K^0_S 2\pi^+ 2\pi^-$

[1] See the footnote to the ARENTON 86 mass value.

$\Gamma(\Lambda_c^+ \ell^- \overline{\nu}_\ell \text{anything})/\Gamma_{total}$ Γ_{47}/Γ

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.109±0.022 OUR AVERAGE					
0.102±0.019±0.013		[1] BARATE	98D	ALEP	$e^+ e^- \to Z$
$0.14\ ^{+0.05}_{-0.04}\ \pm0.02$	29	[2] ABREU	95S	DLPH	$e^+ e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.090±0.022±0.012	55	[3] BUSKULIC	95L	ALEP	Repl. by BARATE 98D
0.18 ±0.07 ±0.02	21	[4] BUSKULIC	92E	ALEP	$\Lambda_c^+ \to pK^-\pi^+$

[1] BARATE 98D reports $[\Gamma(\Lambda_b^0 \to \Lambda_c^+ \ell^- \overline{\nu}_\ell \text{anything})/\Gamma_{total}] \times [B(\overline{b} \to b\text{-baryon})] = 0.0086 \pm 0.0007 \pm 0.0014$ which we divide by our best value $B(\overline{b} \to b\text{-baryon}) = (8.4 \pm 1.1) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Measured using $\Lambda_c \ell^-$ and $\Lambda \ell^+ \ell^-$.

[2] ABREU 95S reports $[\Gamma(\Lambda_b^0 \to \Lambda_c^+ \ell^- \overline{\nu}_\ell \text{anything})/\Gamma_{total}] \times [B(\overline{b} \to b\text{-baryon})] = 0.0118 \pm 0.0026 ^{+0.0031}_{-0.0021}$ which we divide by our best value $B(\overline{b} \to b\text{-baryon}) = (8.4 \pm 1.1) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[3] BUSKULIC 95L reports $[\Gamma(\Lambda_b^0 \to \Lambda_c^+ \ell^- \overline{\nu}_\ell \text{anything})/\Gamma_{total}] \times [B(\overline{b} \to b\text{-baryon})] = 0.00755 \pm 0.0014 \pm 0.0012$ which we divide by our best value $B(\overline{b} \to b\text{-baryon}) = (8.4 \pm 1.1) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[4] BUSKULIC 92E reports $[\Gamma(\Lambda_b^0 \to \Lambda_c^+ \ell^- \overline{\nu}_\ell \text{anything})/\Gamma_{total}] \times [B(\overline{b} \to b\text{-baryon})] = 0.015 \pm 0.0035 \pm 0.0045$ which we divide by our best value $B(\overline{b} \to b\text{-baryon}) = (8.4 \pm 1.1) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Superseded by BUSKULIC 95L.

$\Gamma(\Lambda_c^+ \ell^- \overline{\nu}_\ell)/\Gamma_{total}$ Γ_{48}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.062^{+0.014}_{-0.013}}$ **OUR FIT**				
$\mathbf{0.050^{+0.011}_{-0.008}{}^{+0.016}_{-0.012}}$	[1] ABDALLAH	04A	DLPH	$e^+ e^- \to Z^0$

[1] Derived from a combined likelihood and event rate fit to the distribution of the Isgur-Wise variable and using HQET. The slope of the form factor is measured to be $\rho^2 = 2.03 \pm 0.46 ^{+0.72}_{-1.00}$.

$\Gamma(\Lambda_c^+ \ell^- \overline{\nu}_\ell)/\Gamma(\Lambda_c^+ \pi^-)$ — Γ_{48}/Γ_{32}

VALUE	DOCUMENT ID		TECN	COMMENT
$12.8^{+3.0}_{-2.7}$ OUR FIT				
$16.6 \pm 3.0^{+2.8}_{-3.6}$	AALTONEN	09E	CDF	$p\overline{p}$ at 1.96 TeV

$\Gamma(\Lambda_c^+ \tau^- \overline{\nu}_\tau)/\Gamma(\Lambda_c^+ \pi^+ \pi^- \pi^-)$ — Γ_{49}/Γ_{37}

VALUE	DOCUMENT ID		TECN	COMMENT
$2.46 \pm 0.27 \pm 0.40$	[1] AAIJ	22K	LHCB	pp at 7, 8 TeV

[1] Uses $\tau^- \to \pi^- \pi^+ \pi^- (\pi^0) \nu_\tau$ decays.

$\Gamma(\Lambda_c^+ \pi^+ \pi^- \ell^- \overline{\nu}_\ell)/\Gamma_{\text{total}}$ — Γ_{50}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$0.056^{+0.031}_{-0.030}$	[1] ABDALLAH	04A	DLPH	$e^+ e^- \to Z^0$

[1] Derived from the fraction of $\Gamma(\Lambda_b^0 \to \Lambda_c^+ \ell^- \overline{\nu}_\ell)$ / ($\Gamma(\Lambda_b^0 \to \Lambda_c^+ \ell^- \overline{\nu}_\ell)$ + $\Gamma(\Lambda_b^0 \to \Lambda_c^+ \pi^+ \pi^- \ell^- \overline{\nu}_\ell)$) $= 0.47^{+0.10}_{-0.08}{}^{+0.07}_{-0.06}$.

$\Gamma(\Lambda_c^+ \ell^- \overline{\nu}_\ell)/[\Gamma(\Lambda_c^+ \ell^- \overline{\nu}_\ell) + \Gamma(\Lambda_c^+ \pi^+ \pi^- \ell^- \overline{\nu}_\ell)]$ — $\Gamma_{48}/(\Gamma_{48}+\Gamma_{50})$

VALUE	DOCUMENT ID		TECN	COMMENT
$0.47^{+0.10}_{-0.08}{}^{+0.07}_{-0.06}$	ABDALLAH	04A	DLPH	$e^+ e^- \to Z^0$

$\Gamma(\Lambda_c(2595)^+ \ell^- \overline{\nu}_\ell)/\Gamma(\Lambda_c^+ \ell^- \overline{\nu}_\ell)$ — Γ_{51}/Γ_{48}

VALUE	DOCUMENT ID		TECN	COMMENT
$0.126 \pm 0.033^{+0.047}_{-0.038}$	[1] AALTONEN	09E	CDF	$p\overline{p}$ at 1.96 TeV

[1] AALTONEN 09E assumes isospin conservation for $\Lambda_c(2595) \to \Lambda_c \pi^+ \pi^+$ and $\Lambda_c(2595) \to \Lambda_c \pi^0 \pi^0$. Significant isospin violation from thresholds in $\Lambda_c(2595) \to \Sigma_c(2455)\pi \to \Lambda_c \pi\pi$ may alter the recovered ratio.

$\Gamma(\Lambda_c(2625)^+ \ell^- \overline{\nu}_\ell)/\Gamma(\Lambda_c^+ \ell^- \overline{\nu}_\ell)$ — Γ_{52}/Γ_{48}

VALUE	DOCUMENT ID		TECN	COMMENT
$0.210 \pm 0.042^{+0.071}_{-0.050}$	AALTONEN	09E	CDF	$p\overline{p}$ at 1.96 TeV

$\left[\frac{1}{2}\Gamma(\Sigma_c(2455)^0 \pi^+ \ell^- \overline{\nu}_\ell) + \frac{1}{2}\Gamma(\Sigma_c(2455)^{++} \pi^- \ell^- \overline{\nu}_\ell)\right]/\Gamma(\Lambda_c^+ \ell^- \overline{\nu}_\ell)$ — $(\frac{1}{2}\Gamma_{53}+\frac{1}{2}\Gamma_{54})/\Gamma_{48}$

VALUE	DOCUMENT ID		TECN	COMMENT
$0.054 \pm 0.022^{+0.021}_{-0.018}$	AALTONEN	09E	CDF	$p\overline{p}$ at 1.96 TeV

$\Gamma(p h^-)/\Gamma_{\text{total}}$ — Γ_{55}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.3 \times 10^{-5}$	90	[1] ACOSTA	05O	CDF	$p\overline{p}$ at 1.96 TeV

[1] Assumes f_Λ / $f_d = 0.25$, and equal momentum distribution for Λ_b and B mesons.

$\Gamma(p\pi^-)/\Gamma_{total}$ — Γ_{56}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
4.6±0.8 OUR FIT					
4.1±0.9±0.5		[1] AALTONEN	09C	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<50	90	[2] BUSKULIC	96V	ALEP	$e^+e^- \to Z$

[1] AALTONEN 09C reports $[\Gamma(\Lambda_b^0 \to p\pi^-)/\Gamma_{total}] / [B(B^0 \to K^+\pi^-)] \times [B(\overline{b} \to b\text{-baryon})] / [B(\overline{b} \to B^0)] = 0.042 \pm 0.007 \pm 0.006$ which we multiply or divide by our best values $B(B^0 \to K^+\pi^-) = (2.00 \pm 0.04) \times 10^{-5}$, $B(\overline{b} \to b\text{-baryon}) = (8.4 \pm 1.1) \times 10^{-2}$, $B(\overline{b} \to B^0) = (40.8 \pm 0.7) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

[2] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons.

$\Gamma(pK^-)/\Gamma_{total}$ — Γ_{57}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
5.5±1.0 OUR FIT					
6.4±1.2±0.9		[1] AALTONEN	09C	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<360	90	[2] ADAM	96D	DLPH	$e^+e^- \to Z$
< 50	90	[3] BUSKULIC	96V	ALEP	$e^+e^- \to Z$

[1] AALTONEN 09C reports $[\Gamma(\Lambda_b^0 \to pK^-)/\Gamma_{total}] / [B(B^0 \to K^+\pi^-)] \times [B(\overline{b} \to b\text{-baryon})] / [B(\overline{b} \to B^0)] = 0.066 \pm 0.009 \pm 0.008$ which we multiply or divide by our best values $B(B^0 \to K^+\pi^-) = (2.00 \pm 0.04) \times 10^{-5}$, $B(\overline{b} \to b\text{-baryon}) = (8.4 \pm 1.1) \times 10^{-2}$, $B(\overline{b} \to B^0) = (40.8 \pm 0.7) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

[2] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$.

[3] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons.

$\Gamma(p\pi^-)/\Gamma(pK^-)$ — Γ_{56}/Γ_{57}

VALUE	DOCUMENT ID		TECN	COMMENT
0.84±0.09 OUR FIT				
0.86±0.08±0.05	AAIJ	12AR	LHCB	pp at 7 TeV

$\Gamma(pD_s^-)/\Gamma_{total}$ — Γ_{58}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.8 \times 10^{-4}$	90	AAIJ	14Q	LHCB	pp at 7 TeV

$\Gamma(pD_s^-)/\Gamma(\Lambda_c^+\pi^-)$ — Γ_{58}/Γ_{32}

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.56±0.10±0.15	[1] AAIJ	23K	LHCB	pp at 13 TeV

[1] AAIJ 23K reports this measurement as $(2.56 \pm 0.10 \pm 0.05 \pm 0.14) \times 10^{-3}$ where the last uncertainty is due to the branching fractions $B(D_s^- \to K^-K^+\pi^-)$ and $B(\Lambda_c^+ \to pK^-\pi^+)$ uncertainties.

$\Gamma(p\mu^-\overline{\nu}_\mu)/\Gamma_{total}$ — Γ_{59}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
4.1±1.0	[1] AAIJ	15BG	LHCB	pp at 8 TeV

[1] The ratio of B($\Lambda_b^0 \to p\mu^-\overline{\nu}_\mu$) to B($\Lambda_b^0 \to \Lambda_c^+\mu^-\overline{\nu}_\mu$) is measured within a restricted q^2 region. Combined with theoretical calculations of the form factors and the previously measured value of $|V_{cb}|$, the first $|V_{ub}| = (3.27 \pm 0.15 \pm 0.16 \pm 0.06) \times 10^{-3}$ measurement from the Λ_b decay is obtained, consistent with the exclusively measured world averages.

$\Gamma(p\mu^-\overline{\nu}_\mu)/\Gamma(\Lambda_c^+\ell^-\overline{\nu}_\ell)$ — Γ_{59}/Γ_{48}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.0±0.04±0.08	[1] AAIJ	15BG	LHCB	pp at 8 TeV

[1] This measurement is a ratio of $\Gamma(\Lambda_b^0 \to p\mu^-\overline{\nu}_\mu)$[q^2 $>$ 15 GeV/c^2] to $\Gamma(\Lambda_b^0 \to \Lambda_c^+\mu^-\overline{\nu}_\mu)$[q^2 $>$ 7 GeV/c^2] within a restricted q^2 region. Combined with theoretical calculations of the form factors and the previously measured value of $|V_{cb}|$, the first $|V_{ub}|$ = $(3.27 \pm 0.15 \pm 0.16 \pm 0.06) \times 10^{-3}$ measurement from the Λ_b decay is obtained, consistent with the exclusively measured world averages.

$\Gamma(\Lambda\mu^+\mu^-)/\Gamma_{total}$ — Γ_{60}/Γ

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
10.8±2.8 OUR AVERAGE				
9.6±1.6±2.5	[1] AAIJ	13AJ	LHCB	pp at 7 TeV
17.3±4.2±5.5	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV

[1] Uses B($\Lambda_b^0 \to J/\psi\Lambda$) = $(6.2 \pm 1.4) \times 10^{-4}$. This measurement comes from the sum of the differential rates in q^2 regions excluding those corresponding to J/ψ and $\psi(2S)$ ([8.68,10.09] and [12.86, 14.18] GeV^2/c^4).

$\Gamma(p\pi^-\mu^+\mu^-)/\Gamma_{total}$ — Γ_{61}/Γ

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
$6.9\pm1.9^{+1.7}_{-1.5}$	[1] AAIJ	17P	LHCB	pp at 7, 8 TeV

[1] Excludes J/ψ and $\psi(2S)$ decays to $\mu^+\mu^-$.

$\Gamma(p\pi^-\mu^+\mu^-)/\Gamma(p\pi^-J/\psi, J/\psi \to \mu^+\mu^-)$ — Γ_{61}/Γ_{15}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.4±1.2±0.7	[1] AAIJ	17P	LHCB	pp at 7, 8 TeV

[1] The $p\pi^-\mu^+\mu^-$ mode excludes J/ψ and $\psi(2S)$ decays to $\mu^+\mu^-$.

$\Gamma(pK^-e^+e^-)/\Gamma_{total}$ — Γ_{62}/Γ

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
$0.310\pm0.040^{+0.054}_{-0.047}$	[1,2] AAIJ	20M	LHCB	pp at 7, 8, 13 TeV

[1] Measured over $0.1 < q^2 < 6.0$ GeV/c^2, and $m_{pK} < 2.6$ GeV/c^2.

[2] The first uncertainty is the statistical uncertainty and the second is the combination of all systematic uncertainties including those related to the normalization of $\Lambda_b^0 \to J/\psi pK^-$.

$\Gamma(pK^-\mu^+\mu^-)/\Gamma_{total}$ — Γ_{63}/Γ

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
$0.265\pm0.014^{+0.049}_{-0.039}$	[1,2] AAIJ	20M	LHCB	pp at 7, 8, 13 TeV

[1] Measured over $0.1 < q^2 < 6.0$ GeV/c^2, and $m_{pK} < 2.6$ GeV/c^2.
[2] The first uncertainty is the statistical uncertainty and the second is the combination of all systematic uncertainties including those related to the normalization of $\Lambda_b^0 \to J/\psi pK^-$.

$\Gamma(pK^-\mu^+\mu^-)/\Gamma(pK^-e^+e^-)$ — Γ_{63}/Γ_{62}

VALUE	DOCUMENT ID		TECN	COMMENT
$0.86^{+0.14}_{-0.11}\pm0.05$	[1] AAIJ	20M	LHCB	pp at 7, 8, 13 TeV

[1] Measured over $0.1 < q^2 < 6.0$ GeV/c^2, and $m_{pK} < 2.6$ GeV/c^2.

$\Gamma(pK^-e^+e^-)/\Gamma(pJ/\psi K^-)$ — Γ_{62}/Γ_{16}

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
$9.8^{+1.4}_{-1.3}\pm0.8$	[1] AAIJ	20M	LHCB	pp at 7, 8, 13 TeV

[1] Measured over $0.1 < q^2 < 6.0$ GeV/c^2, and $m_{pK} < 2.6$ GeV/c^2.

$\Gamma(pK^-\mu^+\mu^-)/\Gamma(pJ/\psi K^-)$ — Γ_{63}/Γ_{16}

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
$8.4\pm0.4\pm0.4$	[1] AAIJ	20M	LHCB	pp at 7, 8, 13 TeV

[1] Measured over $0.1 < q^2 < 6.0$ GeV/c^2, and $m_{pK} < 2.6$ GeV/c^2.

$\Gamma(\Lambda\gamma)/\Gamma_{total}$ — Γ_{65}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
$7.1\pm1.5\pm0.9$		[1] AAIJ	19Z	LHCB	pp at 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1300	90	ACOSTA	02G	CDF	$p\overline{p}$ at 1.8 TeV

[1] AAIJ 19Z normalized to $B^0 \to K^{*0}\gamma$ and used an integrated luminosity of 1.7 fb^{-1}.

$\Gamma(\Lambda\eta)/\Gamma_{total}$ — Γ_{66}/Γ

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
$9^{+7}_{-5}\pm1$	[1] AAIJ	15AH	LHCB	pp at 7, 8 TeV

[1] AAIJ 15AH reports $[\Gamma(\Lambda_b^0 \to \Lambda\eta)/\Gamma_{total}]$ / $[B(B^0 \to \eta' K^0)] = 0.142^{+0.11}_{-0.08}$ which we multiply by our best value $B(B^0 \to \eta' K^0) = (6.6 \pm 0.4) \times 10^{-5}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. The single uncertainty quoted with the original measurement combines in quadrature statistical and systematic uncertainties.

$\Gamma(\Lambda\eta'(958))/\Gamma_{total}$ — Γ_{67}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.1\times10^{-6}$	90	[1] AAIJ	15AH	LHCB	pp at 7, 8 TeV

[1] AAIJ 15AH reports $[\Gamma(\Lambda_b^0 \to \Lambda\eta'(958))/\Gamma_{total}]$ / $[B(B^0 \to \eta' K^0)] <$ 0.047 which we multiply by our best value $B(B^0 \to \eta' K^0) = 6.6 \times 10^{-5}$.

$\Gamma(\Lambda\pi^+\pi^-)/\Gamma(\Lambda_c^+\pi^-)$ — Γ_{68}/Γ_{32}

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
9.4±3.8±0.4	[1] AAIJ	16W	LHCB	pp at 7, 8 TeV

[1] AAIJ 16W reports $[\Gamma(\Lambda_b^0 \to \Lambda\pi^+\pi^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^-)]$ / $[B(\Lambda_c^+ \to \Lambda\pi^+)] = (7.3 \pm 1.9 \pm 2.2) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \to \Lambda\pi^+) = (1.29 \pm 0.05) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Lambda K^+\pi^-)/\Gamma(\Lambda_c^+\pi^-)$ — Γ_{69}/Γ_{32}

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
11.5±2.3±0.5	[1] AAIJ	16W	LHCB	pp at 7, 8 TeV

[1] AAIJ 16W reports $[\Gamma(\Lambda_b^0 \to \Lambda K^+\pi^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^-)]$ / $[B(\Lambda_c^+ \to \Lambda\pi^+)] = (8.9 \pm 1.2 \pm 1.3) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \to \Lambda\pi^+) = (1.29 \pm 0.05) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Lambda K^+K^-)/\Gamma(\Lambda_c^+\pi^-)$ — Γ_{70}/Γ_{32}

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
3.27±0.35±0.13	[1] AAIJ	16W	LHCB	pp at 7, 8 TeV

[1] AAIJ 16W reports $[\Gamma(\Lambda_b^0 \to \Lambda K^+K^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^-)]$ / $[B(\Lambda_c^+ \to \Lambda\pi^+)] = (25.3 \pm 1.9 \pm 1.9) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \to \Lambda\pi^+) = (1.29 \pm 0.05) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Lambda\phi)/\Gamma_{total}$ — Γ_{71}/Γ

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
$9.8\pm2.1^{+1.6}_{-1.5}$	[1] AAIJ	16J	LHCB	pp at 7, 8 TeV

[1] AAIJ 16J reports $[\Gamma(\Lambda_b^0 \to \Lambda\phi)/\Gamma_{total}]$ / $[B(B^0 \to K^0\phi)] \times [B(\overline{b} \to b\text{-baryon})]$ / $[B(\overline{b} \to B^0)] = 0.275 \pm 0.055 \pm 0.020$ which we multiply or divide by our best values $B(B^0 \to K^0\phi) = (7.3 \pm 0.7) \times 10^{-6}$, $B(\overline{b} \to b\text{-baryon}) = (8.4 \pm 1.1) \times 10^{-2}$, $B(\overline{b} \to B^0) = (40.8 \pm 0.7) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

$\Gamma(p\pi^-\pi^+\pi^-)/\Gamma(\Lambda_c^+\pi^-)$ — Γ_{72}/Γ_{32}

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
$4.27\pm0.24^{+0.18}_{-0.19}$	[1] AAIJ	18Q	LHCB	pp at 7, 8 TeV

[1] AAIJ 18Q reports $[\Gamma(\Lambda_b^0 \to p\pi^-\pi^+\pi^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^-)]$ / $[B(\Lambda_c^+ \to pK^-\pi^+)] = (6.85 \pm 0.19 \pm 0.08 \pm 0.32) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \to pK^-\pi^+) = (6.24 \pm 0.28) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(pK^-K^+\pi^-)/\Gamma(\Lambda_c^+\pi^-)$ Γ_{73}/Γ_{32}

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.82±0.10±0.04	[1] AAIJ	18Q	LHCB	pp at 7, 8 TeV

[1] AAIJ 18Q reports $[\Gamma(\Lambda_b^0 \to pK^-K^+\pi^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^-)] / [B(\Lambda_c^+ \to pK^-\pi^+)] = (1.32 \pm 0.09 \pm 0.09 \pm 0.10) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \to pK^-\pi^+) = (6.24 \pm 0.28) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(pK^-\pi^+\pi^-)/\Gamma(\Lambda_c^+\pi^-)$ Γ_{74}/Γ_{32}

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
$10.2\pm0.5^{+0.4}_{-0.5}$	[1] AAIJ	18Q	LHCB	pp at 7, 8 TeV

[1] AAIJ 18Q reports $[\Gamma(\Lambda_b^0 \to pK^-\pi^+\pi^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^-)] / [B(\Lambda_c^+ \to pK^-\pi^+)] = (16.4 \pm 0.3 \pm 0.2 \pm 0.7) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \to pK^-\pi^+) = (6.24 \pm 0.28) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(pK^-K^+K^-)/\Gamma(\Lambda_c^+\pi^-)$ Γ_{75}/Γ_{32}

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
$2.56\pm0.15^{+0.11}_{-0.12}$	[1] AAIJ	18Q	LHCB	pp at 7, 8 TeV

[1] AAIJ 18Q reports $[\Gamma(\Lambda_b^0 \to pK^-K^+K^-)/\Gamma(\Lambda_b^0 \to \Lambda_c^+\pi^-)] / [B(\Lambda_c^+ \to pK^-\pi^+)] = (4.11 \pm 0.12 \pm 0.06 \pm 0.19) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \to pK^-\pi^+) = (6.24 \pm 0.28) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

PARTIAL BRANCHING FRACTIONS

$B(\Lambda_b \to \Lambda\mu^+\mu^-)$ ($q^2 < 2.0$ GeV^2/c^4)

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
0.71±0.27 OUR AVERAGE				
$0.72^{+0.24}_{-0.22}\pm0.14$	[1] AAIJ	15AE	LHCB	pp at 7, 8 TeV
0.15±2.01±0.05	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.56±0.76±0.80	[2] AAIJ	13AJ	LHCB	Repl. by AAIJ 15AE

[1] AAIJ 15AE measurement covers $0.1 < q^2 < 2.0$ GeV^2/c^4.
[2] Uses $B(\Lambda_b^0 \to J/\psi\Lambda) = (6.2 \pm 1.4) \times 10^{-4}$.

$B(\Lambda_b \to \Lambda\mu^+\mu^-)$ ($2.0 < q^2 < 4.3$ GeV^2/c^4)

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
$0.28^{+0.28}_{-0.21}$ OUR AVERAGE				
$0.253^{+0.276}_{-0.207}\pm0.046$	[1] AAIJ	15AE	LHCB	pp at 7, 8 TeV
1.8 ±1.7 ±0.6	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.71 ±0.60 ±0.23	[2] AAIJ	13AJ	LHCB	Repl. by AAIJ 15AE

[1] AAIJ 15AE measurement covers $2.0 < q^2 < 4.0$ GeV^2/c^4.
[2] Uses B($\Lambda_b^0 \to J/\psi \Lambda$) = $(6.2 \pm 1.4) \times 10^{-4}$.

B($\Lambda_b \to \Lambda\mu^+\mu^-$) ($q^2 < 4.3$ GeV^2/c^4)

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
2.7±2.5±0.9	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV

B($\Lambda_b \to \Lambda\mu^+\mu^-$) ($4.0 < q^2 < 6.0$ GeV^2/c^4)

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.04^{+0.18}_{-0.00}\pm0.02}$	AAIJ	15AE	LHCB	pp at 7, 8 TeV

B($\Lambda_b \to \Lambda\mu^+\mu^-$) ($1.0 < q^2 < 6.0$ GeV^2/c^4)

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.47^{+0.31}_{-0.27}}$ **OUR AVERAGE**				
$0.45^{+0.30}_{-0.25}\pm0.10$	[1] AAIJ	15AE	LHCB	pp at 7 and 8 TeV
1.3 ±2.1 ±0.4	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV

[1] AAIJ 15AE measurement covers $1.1 < q^2 < 6.0$ GeV^2/c^4.

B($\Lambda_b \to \Lambda\mu^+\mu^-$) ($6.0 < q^2 < 8.0$ GeV^2/c^4)

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.50^{+0.24}_{-0.22}\pm0.10}$	AAIJ	15AE	LHCB	pp at 7, 8 TeV

B($\Lambda_b \to \Lambda\mu^+\mu^-$) ($4.3 < q^2 < 8.68$ GeV^2/c^4)

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
0.5 ±0.7 OUR AVERAGE				
0.66±0.74±0.18	[1] AAIJ	13AJ	LHCB	pp at 7 TeV
−0.2 ±1.6 ±0.1	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV

[1] Uses B($\Lambda_b^0 \to J/\psi \Lambda$) = $(6.2 \pm 1.4) \times 10^{-4}$.

B($\Lambda_b \to \Lambda\mu^+\mu^-$) ($10.09 < q^2 < 12.86$ GeV^2/c^4)

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
2.2 ±0.6 OUR AVERAGE				
$2.08^{+0.42}_{-0.39}\pm0.42$	[1] AAIJ	15AE	LHCB	pp at 7, 8 TeV
3.0 ±1.5 ±1.0	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.55±0.58±0.55	[2] AAIJ	13AJ	LHCB	Repl. by AAIJ 15AE

[1] AAIJ 15AE measurement covers $11.0 < q^2 < 12.5$ GeV^2/c^4.
[2] Uses B($\Lambda_b^0 \to J/\psi \Lambda$) = $(6.2 \pm 1.4) \times 10^{-4}$.

$B(\Lambda_b \to \Lambda\mu^+\mu^-)$ $(14.18 < q^2 < 16.0\ GeV^2/c^4)$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
1.7 ±0.5 OUR AVERAGE Error includes scale factor of 1.1.				
$2.04^{+0.35}_{-0.33}\pm0.42$	[1] AAIJ	15AE	LHCB	pp at 7, 8 TeV
$1.0\ \pm0.7\ \pm0.3$	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.44\pm0.44\pm0.42$	[2] AAIJ	13AJ	LHCB	Repl. by AAIJ 15AE

[1] AAIJ 15AE measurement covers $15.0 < q^2 < 16.0$ GeV^2/c^4.
[2] Uses $B(\Lambda_b^0 \to J/\psi\Lambda) = (6.2 \pm 1.4) \times 10^{-4}$.

$B(\Lambda_b \to \Lambda\mu^+\mu^-)$ $(16.0 < q^2\ GeV^2/c^4)$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
7.0 ±1.9 ±2.2	AALTONEN	11AI	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$4.73\pm0.77\pm1.25$	[1,2] AAIJ	13AJ	LHCB	Repl. by AAIJ 15AE

[1] Uses $B(\Lambda_b^0 \to J/\psi\Lambda) = (6.2 \pm 1.4) \times 10^{-4}$.
[2] Requires $16.00 < q^2 < 20.30$ GeV^2/c^4.

$B(\Lambda_b \to \Lambda\mu^+\mu^-)$ $(18.0 < q^2 < 20.0\ GeV^2/c^4)$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
2.44±0.28±0.50	AAIJ	15AE	LHCB	pp at 7, 8 TeV

$B(\Lambda_b \to \Lambda\mu^+\mu^-)$ $(15.0 < q^2 < 20.0\ GeV^2/c^4)$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
6.00±0.45±1.25	AAIJ	15AE	LHCB	pp at 7, 8 TeV

$B(\Lambda_b \to \Lambda(1520)^0\mu^+\mu^-)$ $(1.1 < q^2 < 6.0\ GeV^2/c^4)$

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
9.56±1.13±0.78±1.81	[1] AAIJ	23BB	LHCB	pp at 7, 8, 13 TeV

[1] Uses $B(\Lambda_b \to J/\psi pK^-) = (3.2 \pm 0.6) \times 10^{-4}$. The last uncertainty is due to uncertainties of $B(\Lambda_b^0 \to pK^- J/\psi)$ and $B(J/\psi \to \mu^+\mu^-)$ values.

$B(\Lambda_b \to \Lambda(1520)^0\mu^+\mu^-)$ $(15.0 < q^2 < 17.0\ GeV^2/c^4)$

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
1.14±0.48±0.26±0.22	[1] AAIJ	23BB	LHCB	pp at 7, 8, 13 TeV

[1] Uses $B(\Lambda_b \to J/\psi pK^-) = (3.2 \pm 0.6) \times 10^{-4}$. The last uncertainty is due to uncertainties of $B(\Lambda_b^0 \to pK^- J/\psi)$ and $B(J/\psi \to \mu^+\mu^-)$ values.

CP VIOLATION

A_{CP} is defined as

$$A_{CP} = \frac{B(\Lambda_b^0 \to f) - B(\overline{\Lambda}_b^0 \to \overline{f})}{B(\Lambda_b^0 \to f) + B(\overline{\Lambda}_b^0 \to \overline{f})},$$

the *CP*-violation asymmetry of exclusive Λ_b^0 and $\overline{\Lambda}_b^0$ decay.

$A_{CP}(\Lambda_b \to p\pi^-)$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.025±0.029 OUR AVERAGE	Error includes scale factor of 1.2.			
−0.035±0.017±0.020	AAIJ	18AX	LHCB	pp at 7 and 8 TeV
0.06 ±0.07 ±0.03	AALTONEN	14P	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.03 ±0.17 ±0.05	AALTONEN	11N	CDF	Repl. by AALTONEN 14P

$A_{CP}(\Lambda_b \to pK^-)$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.025±0.022 OUR AVERAGE				
−0.020±0.013±0.019	AAIJ	18AX	LHCB	pp at 7 and 8 TeV
−0.10 ±0.08 ±0.04	AALTONEN	14P	CDF	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.37 ±0.17 ±0.03	AALTONEN	11N	CDF	Repl. by AALTONEN 14P

$A_{CP}(\Lambda_b \to DpK^-)$

VALUE	DOCUMENT ID		TECN	COMMENT
$0.12\pm0.09^{+0.02}_{-0.03}$	[1] AAIJ	21AD	LHCB	pp at 7, 8, 13 TeV

[1] A_{CP} is measured from $(B(\Lambda_b^0 \to [K^+\pi^-]_D pK^-) - B(\overline{\Lambda}_b^0 \to [K^-\pi^+]_D \overline{p}K^+))/(B(\Lambda_b^0 \to [K^+\pi^-]_D pK^-) + B(\overline{\Lambda}_b^0 \to [K^-\pi^+]_D \overline{p}K^+))$ in the full phase space.

$\Delta A_{CP}(pK^-/\pi^-)$

$\Delta A_{CP} \equiv A_{CP}(pK^-) - A_{CP}(p\pi^-)$

VALUE	DOCUMENT ID		TECN	COMMENT
0.014±0.022±0.010	AAIJ	18AX	LHCB	pp at 7 and 8 TeV

$A_{CP}(\Lambda_b \to p\overline{K}^0\pi^-)$

VALUE	DOCUMENT ID		TECN	COMMENT
0.22±0.13±0.03	AAIJ	14Q	LHCB	pp at 7 TeV

$\Delta A_{CP}(J/\psi p\pi^-/K^-)$

$\Delta A_{CP} \equiv A_{CP}(J/\psi p\pi^-) - A_{CP}(J/\psi pK^-)$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
5.7±2.4±1.2	AAIJ	14K	LHCB	pp at 7, 8 TeV

$A_{CP}(\Lambda_b \to \Lambda K^+\pi^-)$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.53±0.23±0.11	[1] AAIJ	16W	LHCB	pp at 7, 8 TeV

[1] Measured relative to $\Lambda_b^0 \to \Lambda_c^+\pi^-$ decay.

$A_{CP}(\Lambda_b \to \Lambda K^+ K^-)$

VALUE		DOCUMENT ID		TECN	COMMENT
$-0.28\pm0.10\pm0.07$	[1]	AAIJ	16W	LHCB	pp at 7, 8 TeV

[1] Measured relative to $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ decay.

$\Delta A_{CP}(\Lambda_b^0 \to pK^- \mu^+ \mu^-)$

$\Delta A_{CP} \equiv A_{CP}(pK^- \mu^+ \mu^-) - A_{CP}(pK^- J/\psi)$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$-3.5\pm5.0\pm0.2$	AAIJ	17T	LHCB	pp at 7, 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to p\pi^- \pi^+ \pi^-)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to p\pi^- \pi^+ \pi^-) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to p\pi^- \pi^+)\pi^-)$

VALUE (units 10^{-2})		DOCUMENT ID		TECN	COMMENT
$1.1\pm2.5\pm0.6$	[1]	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

[1] Full phase space.

$\Delta A_{CP}(\Lambda_b^0 \to (p\pi^- \pi^+ \pi^-)_{LBM})$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to (p\pi^- \pi^+ \pi^-)_{LBM}) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to p\pi^- \pi^+)\pi^-)$. Two-body low invariant-mass region (LBM): m($p\pi^-$) $<$ 2000MeV and m($\pi^+\pi^-$) $<$ 1640 MeV.

VALUE (units 10^{-2})		DOCUMENT ID		TECN	COMMENT
$3.7\pm4.1\pm0.5$	[1]	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

[1] Measurement done with $m(p\pi^-) < 2000$ MeV/c^2 and $m(\pi^+\pi^-) < 1640$ MeV/c^2.

$\Delta A_{CP}(\Lambda_b^0 \to pa_1(1260)^-)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to pa_1(1260)^-) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to p\pi^- \pi^+)\pi^-)$. 419 $<$ m($\pi^+\pi^-\pi^+$) $<$ 1500 MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$-1.5\pm4.2\pm0.6$	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to N(1520)^0 \rho(770)^0)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to N(1520)^0 \rho(770)^0) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to p\pi^- \pi^+)\pi^-)$. 1078 $<$ m($p\pi^-$) $<$ 1800 MeV and m($\pi^+\pi^-$) $<$ 1100 MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$2.0\pm4.9\pm0.4$	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to \Delta(1232)^{++} \pi^- \pi^-)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to \Delta(1232)^{++} \pi^- \pi^-) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to p\pi^- \pi^+)\pi^-)$. 1078 $<$ m($p\pi^+$) $<$ 1432 MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$0.1\pm3.2\pm0.6$	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to pK^-\pi^+\pi^-)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to pK^-\pi^+\pi^-) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^-\pi^+)\pi^-)$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
3.2±1.1±0.6	[1] AAIJ	19AH	LHCB	pp at 7 and 8 TeV

[1] Full phase space.

$\Delta A_{CP}(\Lambda_b^0 \to (pK^-\pi^+\pi^-)_{LBM})$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to (pK^-\pi^+\pi^-)_{LBM}) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^-\pi^+)\pi^-)$. Two-body low invariant-mass region (LBM): m(pK^-) < 2000 MeV and m($\pi^+\pi^-$) < 1640 MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
3.5±1.5±0.5	[1] AAIJ	19AH	LHCB	pp at 7 and 8 TeV

[1] Measurement done with $m(pK^-) < 2000$ MeV/c^2 and $m(\pi^+\pi^-) < 1640$ MeV/c^2.

$\Delta A_{CP}(\Lambda_b^0 \to N(1520)^0 K^*(892)^0)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to N(1520)^0 K^*(892)^0) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^-\pi^+)\pi^-)$. 1078 < m($p\pi^-$) < 1800 MeV and 750 < m($\pi^+ K^-$) < 1100 MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
5.5±2.5±0.5	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to \Lambda(1520)\rho(770)^0)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to \Lambda(1520)\rho(770)^0) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^-\pi^+)\pi^-)$. 1460 < m($pK^-$) < 1580 MeV and m($\pi^+\pi^-$) < 1100 MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.6±6.0±0.5	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to \Delta(1232)^{++} K^-\pi^-)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to \Delta(1232)^{++} K^-\pi^-) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^-\pi^+)\pi^-)$. 1078 < m($p\pi^+$) < 1432 MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.4±2.6±0.6	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to pK_1(1410)^-)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to pK_1(1410)^-) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^-\pi^+)\pi^-)$. 1200 < m($K^-\pi^+\pi^-$) < 1600 MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.7±3.5±0.8	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to pK^-K^+\pi^-)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to pK^-K^+\pi^-) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to p\pi^-\pi^+)\pi^-)$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
−6.9±4.9±0.8	[1] AAIJ	19AH	LHCB	pp at 7 and 8 TeV

[1] Full phase space.

$\Delta A_{CP}(\Lambda_b^0 \to pK^- K^+ K^-)$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to pK^- K^+ K^-) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^- \pi^+)\pi^-)$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.2±1.8±0.6	[1] AAIJ	19AH	LHCB	pp at 7 and 8 TeV

[1] Full phase space.

$\Delta A_{CP}(\Lambda_b^0 \to \Lambda(1520)\phi(1020))$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to \Lambda(1520)\phi(1020)) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^- \pi^+)\pi^-)$. $1460 < m(pK^-) < 1600$ MeV and $1005 < m(K^+ K^-) < 1040$ MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.3±5.6±0.4	AAIJ	19AH	LHCB	pp at 7 and 8 TeV

$\Delta A_{CP}(\Lambda_b^0 \to (pK^-)_{highmass}\ \phi(1020))$

$\Delta A_{CP} \equiv A_{CP}\ (\Lambda_b^0 \to (pK^-)_{highmass}\ \phi(1020)) - A_{CP}(\Lambda_b^0 \to (\Lambda_c pK^- \pi^+)\pi^-)$. $m(pK^-) > 1600$ MeV and $1005 < m(K^+ K^-) < 1040$ MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
−0.7±3.3±0.7	[1] AAIJ	19AH	LHCB	pp at 7 and 8 TeV

[1] Measurement done with $m(pK^-) > 1600$ MeV/c^2.

$\Delta A_{CP}(\Lambda_b^0 \to (pK^- K^+ K^-)_{LBM})$

$\Delta A_{CP} \equiv A_{CP}(\Lambda_b^0 \to (pK^- K^+ K^-)_{LBM}) - A_{CP}(\Lambda_b^0 \to (\Lambda_c^+ \to pK^- \pi^+)\pi^-)$. Two-body low invariant-mass region (LBM): $m(pK^-) < 2000$ MeVand $m(K^+ K^-) < 1675$ MeV.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
2.7±2.3±0.6	[1] AAIJ	19AH	LHCB	pp at 7 and 8 TeV

[1] Measurement done with $m(pK^-) < 2000$ MeV/c^2 and $m(K^+ K^-) < 1675$ MeV/c^2.

CP AND *T* VIOLATION PARAMETERS

Measured values of the triple-product asymmetry parameters, odd under time-reversal, are defined as $A_{c(s)}(\Lambda/\phi) = (N^+_{c(s)} - N^-_{c(s)})$ / (sum) where $N^+_{c(s)}$, $N^-_{c(s)}$ are the number of Λ or ϕ candidates for which the cos(Φ) and sin(Φ) observables are positive and negative, respectively. Angles cos(Φ) and sin(Φ) are defined as in LEITNER 07.

$A_c(\Lambda)$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.22±0.12±0.06	AAIJ	16J	LHCB	pp at 7, 8 TeV

$A_s(\Lambda)$

VALUE	DOCUMENT ID		TECN	COMMENT
0.13±0.12±0.05	AAIJ	16J	LHCB	pp at 7, 8 TeV

$A_c(\phi)$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.01±0.12±0.03	AAIJ	16J	LHCB	pp at 7, 8 TeV

$A_s(\phi)$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.07±0.12±0.01	AAIJ	16J	LHCB	pp at 7, 8 TeV

$a_{CP}(\Lambda_b^0 \to p\pi^-\pi^+\pi^-)$

Observable calculated as half of the difference between triple products for Λ_b^0 and $\overline{\Lambda}_b^0$, which is sensitive to CP violation.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.7 ±0.7 ±0.2	[1] AAIJ	20AB	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.15±1.45±0.32	[2] AAIJ	17H	LHCB	Repl. by AAIJ 20AB

[1] Used both triple product asymmetries and the unbinned energy test method.
[2] Measured over full phase space of the decay.

$a_{CP}(\Lambda_b^0 \to pK^-\pi^+\pi^-)$

Observable calculated as half of the difference between triple products for Λ_b^0 and $\overline{\Lambda}_b^0$, which is sensitive to CP violation.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.81±0.84±0.31	[1] AAIJ	18AG	LHCB	pp at 7, 8 TeV

[1] Measured over full phase space of the decay.

$a_{CP}(\Lambda_b^0 \to pK^-K^+\pi^-)$

Observable calculated as half of the difference between triple products for Λ_b^0 and $\overline{\Lambda}_b^0$, which is sensitive to CP violation.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.93±4.54±0.42	[1] AAIJ	17H	LHCB	pp at 7, 8 TeV

[1] Measured over full phase space of the decay.

$a_{CP}(\Lambda_b^0 \to pK^-K^+K^-)$

Observable calculated as half of the difference between triple products for Λ_b^0 and $\overline{\Lambda}_b^0$, which is sensitive to CP violation.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
1.12±1.51±0.32	[1] AAIJ	18AG	LHCB	pp at 7, 8 TeV

[1] Measured over full phase space of the decay.

$a_{CP}(\Lambda_b^0 \to pK^-\mu^+\mu^-)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
1.2±5.0±0.7	AAIJ	17T	LHCB	pp at 7, 8 TeV

P VIOLATION PARAMETERS

Observables calculated as average of the triple products for Λ_b^0 and $\overline{\Lambda}_b^0$, which is sensitive to parity violation.

$a_P(\Lambda_b^0 \to p\pi^-\pi^+\pi^-)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−4.0 ±0.7 ±0.2	[1] AAIJ	20AB	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−3.71±1.45±0.32	[2] AAIJ	17H	LHCB	Repl. by AAIJ 20AB

[1] Used both triple product asymmetries and the unbinned energy test method.
[2] Measured over full phase space of the decay.

$a_P(\Lambda_b^0 \to pK^-\pi^+\pi^-)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.60±0.84±0.31	[1] AAIJ	18AG	LHCB	pp at 7, 8 TeV

[1] Measured over full phase space of the decay.

$a_P(\Lambda_b^0 \to pK^-K^+\pi^-)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
3.62±4.54±0.42	[1] AAIJ	17H	LHCB	pp at 7, 8 TeV

[1] Measured over full phase space of the decay.

$a_P(\Lambda_b^0 \to pK^-K^+K^-)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−1.56±1.51±0.32	[1] AAIJ	18AG	LHCB	pp at 7, 8 TeV

[1] Measured over full phase space of the decay.

$a_P(\Lambda_b^0 \to pK^-\mu^+\mu^-)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−4.8±5.0±0.7	AAIJ	17T	LHCB	pp at 7, 8 TeV

Λ_b^0 DECAY PARAMETERS

See the note on "Baryon Decay Parameters" in the neutron Listings.

α decay parameter for $\Lambda_b \to J/\psi\Lambda$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.017±0.026 OUR AVERAGE				
$-0.022^{+0.027}_{-0.026}$	[1] AAIJ	20O	LHCB	pp at 7, 8, 13 TeV
−0.14 ±0.14 ±0.10	[2] SIRUNYAN	18R	CMS	pp at 7, 8 TeV
0.30 ±0.16 ±0.06	[3] AAD	14L	ATLS	pp at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.05 ±0.17 ±0.07	[4] AAIJ	13AG	LHCB	Repl. by AAIJ 20O

[1] Extracted using a Bayesian analysis. The most probable value is given as −0.022, with a 68% credibility interval [-0.048, 0.005]. Transverse polarizations of Λ_b^0 of −0.004 (68% credibility interval [-0.064, 0.051]), 0.001 (68% credibility interval [-0.035, 0.045]), and 0.032 (68% credibility interval [-0.011, 0.065]) are also reported at 7 TeV, 8 TeV and 13 TeV, respectively. Note that both statistical and systematic uncertainties are included.

[2] An angular analysis of $\Lambda_b \to J/\psi\Lambda$ decay is performed. Note that the sign of α in CMS definition is the opposite to that used by AAIJ 13AG and AAD 14L. Λ_b transverse production polarization of 0.00 ± 0.06 ± 0.06 is also reported, as well as squares of the helicity amplitudes.

[3] An angular analysis of $\Lambda_b \to J/\psi\Lambda$ decay is performed and magnitudes of all helicity amplitudes are also reported.

[4] An angular analysis of $\Lambda_b \to J/\psi\Lambda$ decay is performed and a Λ_b transverse production polarization of 0.06 ± 0.07 ± 0.02 is also reported.

α_γ decay parameter for $\Lambda_b \to \Lambda\gamma$

Measures asymmetry between left- and right-handed photons in the decay.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.82^{+0.17}_{-0.26}{}^{+0.04}_{-0.13}$	[1] AAIJ	22M	LHCB	pp at 13 TeV

[1] AAIJ 22M provides a combined measurement as well as measured $\alpha_\gamma^- = 1.26 \pm 0.42 \pm 0.20$ and $\alpha_\gamma^+ = 0.55 \pm 0.32 \pm 0.16$ for Λ_b^0 and $\overline{\Lambda}_b^0$ separately.

$f_L(\mu\mu)$ longitudinal polarization fraction in $\Lambda_b \to \Lambda\mu^+\mu^-$

VALUE	DOCUMENT ID		TECN	COMMENT
$0.61^{+0.11}_{-0.14} \pm 0.03$	[1] AAIJ	15AE	LHCB	pp at 7, 8 TeV

[1] AAIJ 15AE measurement covers $15.0 < q^2 < 20.0$ GeV^2/c^4.

FORWARD-BACKWARD ASYMMETRIES

The forward-backward assymmetry is defined as $A_{FB}(\Lambda_b^0)$ = [N(F) − N(B)] / [N(F) + N(B)], where the forward (F) direction corresponds to a particle (Λ_b^0 or Λ_b^-) sharing valence quark flavors with a beam particle with the same sign of rapidity.

$A_{FB}(\Lambda_b^0 \to J/\psi\Lambda)$

VALUE	DOCUMENT ID		TECN	COMMENT
$0.04 \pm 0.07 \pm 0.02$	[1] ABAZOV	15I	D0	$p\overline{p}$ at 1.96 TeV

[1] The measured asymmetry integrated over rapidity y in the range of $0.1 < |y| < 2.0$.

$A^\ell_{FB}(\mu\mu)$ in $\Lambda_b \to \Lambda\mu^+\mu^-$

VALUE	DOCUMENT ID		TECN	COMMENT
$-0.39 \pm 0.04 \pm 0.01$	[1] AAIJ	18AP	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-0.05 \pm 0.09 \pm 0.03$	[2] AAIJ	15AE	LHCB	Repl. by AAIJ 18AP.

[1] The measurement covers $15.0 < q^2 < 20.0$ GeV^2/c^4.
[2] AAIJ 15AE measurement covers $15.0 < q^2 < 20.0$ GeV^2/c^4.

$\Delta(A^\ell_{FB}(\mu\mu))$ in $\Lambda_b \to \Lambda\mu^+\mu^-$

Difference of asymmetries $A^\ell_{FB}(\mu\mu)$ in $\Lambda_b \to \Lambda\mu^+\mu^-$ between Λ_b and $\overline{\Lambda}_b$ decays

VALUE	DOCUMENT ID		TECN	COMMENT
$-0.05 \pm 0.09 \pm 0.03$	AAIJ	18AO	LHCB	pp at 7, 8 TeV

$A^h_{FB}(p\pi)$ in $\Lambda_b \to \Lambda(p\pi)\mu^+\mu^-$

VALUE	DOCUMENT ID		TECN	COMMENT
$-0.30 \pm 0.05 \pm 0.02$	[1] AAIJ	18AP	LHCB	pp at 7, 8, 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-0.29 \pm 0.07 \pm 0.03$	[2] AAIJ	15AE	LHCB	Repl. by AAIJ 18AP.

[1] The measurement covers $15.0 < q^2 < 20.0$ GeV^2/c^4.
[2] AAIJ 15AE measurement covers $15.0 < q^2 < 20.0$ GeV^2/c^4.

$A^{\ell h}_{FB}$ in $\Lambda_b \to \Lambda \mu^+ \mu^-$

VALUE	DOCUMENT ID		TECN	COMMENT
0.25±0.04±0.01	[1] AAIJ	18AP	LHCB	pp at 7, 8, 13 TeV

[1] The measurement covers $15.0 < q^2 < 20.0$ GeV^2/c^4.

$\Lambda_b^0 - \overline{\Lambda}_b^0$ Production Asymmetry

$$A_P(\Lambda_b^0) = [\sigma(\Lambda_b^0) - \sigma(\overline{\Lambda}_b^0)] \;/\; [\sigma(\Lambda_b^0) + \sigma(\overline{\Lambda}_b^0)]$$

$A_P(\Lambda_b^0)$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.4 ±0.4 OUR AVERAGE	Error includes scale factor of 1.8.			
1.92±0.35	[1] AAIJ	21AJ	LHCB	pp at 7 TeV
1.09±0.29	[1] AAIJ	21AJ	LHCB	pp at 8 TeV
−0.11±2.53±1.08	[2] AAIJ	17BF	LHCB	pp at 7 TeV
3.44±1.61±0.76	[2] AAIJ	17BF	LHCB	pp at 8 TeV

[1] Integrated over the kinematic range $2 < p_T < 27$ GeV/c and $2.15 < y < 4.10$.

[2] Indirect determination in kinematic range $2 < p_T < 30$ GeV/c and $2.1 < \eta < 4.5$ from production asymmetries of B^+, B^0 and B_s^0.

Λ_b^0 REFERENCES

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AAIJ	22K	PRL 128 191803	R. Aaij et al.	(LHCb Collab.)
AAIJ	22M	PR D105 L051104	R. Aaij et al.	(LHCb Collab.)
AAIJ	22R	JHEP 2203 153	R. Aaij et al.	(LHCb Collab.)
AAIJ	21AD	PR D104 112008	R. Aaij et al.	(LHCb Collab.)
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AAIJ	21B	PL B815 136172	R. Aaij et al.	(LHCb Collab.)
AAIJ	21R	JHEP 2105 095	R. Aaij et al.	(LHCb Collab.)
AAIJ	20AB	PR D102 051101	R. Aaij et al.	(LHCb Collab.)
AAIJ	20AK	PR D102 112012	R. Aaij et al.	(LHCb Collab.)
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AAIJ	18AO	JHEP 1809 145 (errat.)	R. Aaij et al.	(LHCb Collab.)
AAIJ	18AP	JHEP 1809 146	R. Aaij et al.	(LHCb Collab.)
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AAIJ	14E	JHEP 1404 114	R. Aaij *et al.*	(LHCb Collab.)
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AAIJ	14I	JHEP 1408 143	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	14K	JHEP 1407 103	R. Aaij *et al.*	(LHCb Collab.)
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