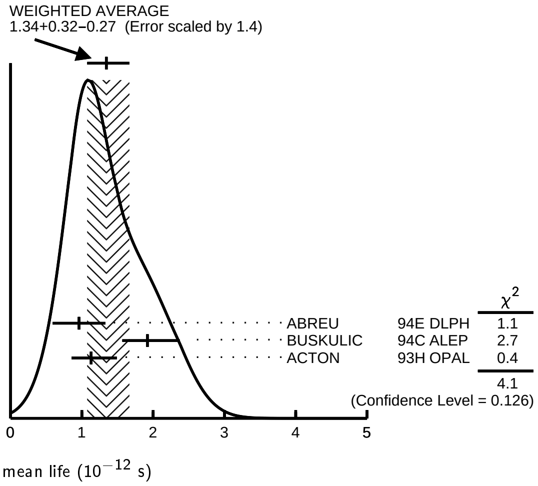
B_s^0 MEAN LIFE

VALUE (10^{-12} s)	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
$1.34^{+0.32}_{-0.27}$ OUR AVERAGE	Error includes scale factor of 1.4. See the ideogram below.			
0.96 ± 0.37	41	[1] ABREU 94E	DLPH	$e^+e^- \rightarrow Z$
$1.92^{+0.45}_{-0.35} \pm 0.04$	31	[2] BUSKULIC 94C	ALEP	$e^+e^- \rightarrow Z$
$1.13^{+0.35}_{-0.26} \pm 0.09$	22	[2] ACTON 93H	OPAL	$e^+e^- \rightarrow Z$

[1] ABREU 94E uses the flight-distance distribution of D_s vertices, ϕ-lepton vertices, and $D_s \mu$ vertices. This result inclues the result of ABREU 92M.
[2] Measured using $D_s \ell^+$ events.



B_s^0 DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	D_s^- anything	seen
Γ_2	$D_s^- \ell^+ \nu_\ell$ anything (ℓ means sum of e and μ)	seen
Γ_3	$D_s^- \pi^+$	seen
Γ_4	$J/\psi(1S)\phi$	seen
Γ_5	$\psi(2S)\phi$	seen

B_s^0 BRANCHING RATIOS

$\Gamma(D_s^- \text{anything})/\Gamma_{total}$ — Γ_1/Γ

VALUE	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
seen	147	[3] ACTON 92N	OPAL	$e^+e^- \rightarrow Z$

[3] ACTON 92N assumes that excess of 147 ± 48 D_s^0 $e^+e^- \rightarrow Z$ 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 f($\overline{b} \rightarrow B_s^0$)B($B_s^0 \rightarrow D_s^-$ anything)$\times$B($D_s^- \rightarrow \phi\pi^-$) = $(5.9 \pm 1.9 \pm 1.1) \times 10^{-3}$.

$\Gamma(D_s^- \ell^+ \nu_\ell \text{anything})/\Gamma_{total}$ — Γ_2/Γ

ℓ means sum of e and μ

VALUE	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
seen	7	[4] ABREU 92M	DLPH	$e^+e^- \rightarrow Z$
seen	18	[5] ACTON 92N	OPAL	$e^+e^- \rightarrow Z$
seen	27	[6] BUSKULIC 92E	ALEP	$e^+e^- \rightarrow Z$

[4] ABREU 92M measured muons only and obtained product branching ratio B($Z \rightarrow b$ or $\overline{b}$) $\times$ B($\overline{b} \rightarrow B_s$) $\times$ B($B_s \rightarrow D_s \mu^+ \nu_\mu$X) $\times$ B($D_s \rightarrow \phi\pi$) = $(18 \pm 8) \times 10^{-5}$.
[5] ACTON 92N is measured using $D_s \rightarrow \phi\pi^+$ and $K^*(892)^0 K^+$ events. The product branching fraction measured is measured to be f($\overline{b} \rightarrow B_s^0$)B($B_s^0 \rightarrow D_s^- \ell^+ \nu_\ell$anything) $\times$B($D_s^- \rightarrow \phi\pi^-$) = $(3.9 \pm 1.1 \pm 0.8) \times 10^{-4}$.
[6] BUSKULIC 92E is measured using $D_s \rightarrow \phi\pi^+$ 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 f($\overline{b} \rightarrow B_s^0$)B($B_s^0 \rightarrow D_s^- \ell^+ \nu_\ell$anything) $= 0.040 \pm 0.011^{+0.010}_{-0.012}$.

$\Gamma(D_s^- \pi^+)/\Gamma_{total}$ — Γ_3/Γ

VALUE	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
seen	1	BUSKULIC 93G	ALEP	$e^+e^- \rightarrow Z$

$\Gamma(J/\psi(1S)\phi)/\Gamma_{total}$ — Γ_4/Γ

VALUE	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
seen	14	[7] ABE 93F	CDF	$p\overline{p}$ at 1.8 TeV
seen	1	[8] ACTON 92N	OPAL	$e^+e^- \rightarrow Z$

[7] ABE 93F measured using $J/\psi(1S) \rightarrow \mu^+\mu^-$ and $\phi \rightarrow K^+K^-$.
[8] In ACTON 92N, a limit on the product branching fraction is measured to be f($\overline{b} \rightarrow B_s^0$)B($B_s^0 \rightarrow J/\psi(1S)\phi$) $\leq 0.22 \times 10^{-2}$.

$\Gamma(\psi(2S)\phi)/\Gamma_{total}$ — Γ_5/Γ

VALUE	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
seen	1	BUSKULIC 93G	ALEP	$e^+e^- \rightarrow Z$

B_s^0-$\overline{B}_s^0$ MIXING

For a discussion of B_s^0-$\overline{B}_s^0$ mixing see the note on "B^0-$\overline{B}^0$ Mixing and *CP* Violation in *B* Decay" in the B^0 Full Listings above.

χ_s

This B_s^0-$\overline{B}_s^0$ mixing parameter measures the probability (integrated over time) that a produced B_s^0 ($\overline{B}_s^0$) decays as a $\overline{B}_s^0$ (B_s^0). The χ_s values are derived from combining χ_B values measured at high energy (see following datablock) with χ_d values from the $\Upsilon(4S)$. Mixing violates $\Delta B \neq 2$ rule.

VALUE	*CL%*	*DOCUMENT ID*	*TECN*	*COMMENT*
0.62 ± 0.13		[9] PDG 94	RVUE	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.74 ± 0.27	95	[10] ABREU 94F	RVUE	$e^+e^- \rightarrow Z$
0.46 ± 0.21		[11] ADEVA 92C	RVUE	
0.53 ± 0.15		[12] ALBAJAR 91D	RVUE	

[9] From our χ_B and χ_d averages assuming $f_d = 0.391$ and $f_s = 0.117$.
[10] From a combination of DELPHI (ABREU 94F), CLEO (ARTUSO 89), and ARGUS (ALBRECHT 92L). Estimated from ABREU 94F figure 7.
[11] From combination of L3 (ADEVA 92C), CLEO (ARTUSO 89), and ARGUS (ALBRECHT 92L). Corresponding limit is > 0.16 at 90%CL.
[12] From combination of UA1 (ALBAJAR 91D), CLEO (BEAN 87B), ARGUS (ALBRECHT 87I), ALEPH (DECAMP 91), and L3 (ADEVA 90P). Corresponding limits are > 0.23 at 95% CL and > 0.27 at 90% CL.

χ_B at high energy

This is a B-$\overline{B}$ mixing measurement for an admixture of B^0 and B_s^0 at high energy.

$\chi_B = f_d \chi_d + f_s \chi_s$

where f_d and f_s are the production fractions of B_d^0 and B_s^0 mesons relative to all b-flavored hadrons. Only the measurements at the Z and higher energy $p\overline{p}$ are averaged.

VALUE	*CL%*	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
0.133 ± 0.011 OUR AVERAGE					
$0.121^{+0.044}_{-0.040} \pm 0.017$		1665	[13] ABREU 93C	DLPH	$e^+e^- \rightarrow Z$
$0.143^{+0.022}_{-0.021} \pm 0.007$			[14] AKERS 93B	OPAL	$e^+e^- \rightarrow Z$
$0.121 \pm 0.017 \pm 0.006$			[15] ADEVA 92C	L3	$e^+e^- \rightarrow Z$
0.129 ± 0.022			[16] BUSKULIC 92B	ALEP	$e^+e^- \rightarrow Z$
$0.176 \pm 0.031 \pm 0.032$		1112	[17] ABE 91G	CDF	$p\overline{p}$ 1.8 TeV
$0.148 \pm 0.029 \pm 0.017$			[18] ALBAJAR 91D	UA1	$p\overline{p}$ 630 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.144 \pm 0.014^{+0.017}_{-0.011}$			[19] ABREU 94F	DLPH	$e^+e^- \rightarrow Z$
$0.145^{+0.041}_{-0.035} \pm 0.018$			[20] ACTON 92C	OPAL	$e^+e^- \rightarrow Z$
$0.132 \pm 0.22\ ^{+0.015}_{-0.012}$		823	[21] DECAMP 91	ALEP	$e^+e^- \rightarrow Z$
$0.178^{+0.049}_{-0.040} \pm 0.020$			[22] ADEVA 90P	L3	$e^+e^- \rightarrow Z$
$0.17\ ^{+0.15}_{-0.08}$			[23,24] WEIR 90	MRK2	e^+e^- 29 GeV
$0.21\ ^{+0.29}_{-0.15}$			[23] BAND 88	MAC	E^{ee}_{cm}= 29 GeV
>0.02	90		[23] BAND 88	MAC	E^{ee}_{cm}= 29 GeV
0.121 ± 0.047			[23,25] ALBAJAR 87C	UA1	Repl. by ALBAJAR 91D
<0.12	90		[23,26] SCHAAD 85	MRK2	E^{ee}_{cm}= 29 GeV

[13] ABREU 93C data analyzed using ee, $e\mu$, and $\mu\mu$ events.
[14] AKERS 93B analysis performed using dilepton events.
[15] ADEVA 92C uses electrons and muons.
[16] BUSKULIC 92B uses a jet charge technique combined with electrons and muons.
[17] ABE 91G measurement of χ is done with $e\mu$ and ee events.
[18] ALBAJAR 91D measurement of χ is done with dimuons.
[19] ABREU 94F uses the average electric charge sum of the jets recoiling against a b-quark jet tagged by a high p_T muon. The result is for $\overline{\chi} = f_d \chi_d + 0.9 f_s \chi_s$.
[20] ACTON 92C uses electrons and muons. Superseded by AKERS 93B.
[21] DECAMP 91 done with opposite and like-sign dileptons. Superseded by BUSKULIC 92B.
[22] ADEVA 90P measurement uses ee, $\mu\mu$, and $e\mu$ events from 118k events at the Z. Superseded by ADEVA 92C.
[23] These experiments are not in the average because the combination of B_s and B_d mesons which they see could differ from those at higher energy.
[24] The WEIR 90 measurement supersedes the limit obtained in SCHAAD 85. The 90% CL are 0.06 and 0.38.
[25] ALBAJAR 87C measured $\chi = (\overline{B}^0 \rightarrow B^0 \rightarrow \mu^+$X) divided by the average production weighted semileptonic branching fraction for B hadrons at 546 and 630 GeV.
[26] Limit is average probability for hadron containing B quark to produce a positive lepton.