BOTTOM, STRANGE MESONS ($B = \pm 1, S = \mp 1$)

$B_s^0 = s\overline{b}$, $\overline{B}_s^0 = \overline{s}\,b$, similarly for B_s^{*}'s

B_s^0

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

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

Mass $m_{B_s^0} = 5369.6 \pm 2.4$ MeV

Mean life $\tau = (1.461 \pm 0.057) \times 10^{-12}$ s

$c\tau = 438\ \mu$m

B_s^0-$\overline{B}_s^0$ mixing parameters

$\Delta m_{B_s^0} = m_{B_{sH}^0} - m_{B_{sL}^0} > 13.1 \times 10^{12}\ \hbar\ \mathrm{s}^{-1}$, CL = 95%

$x_s = \Delta m_{B_s^0}/\Gamma_{B_s^0} > 19.0$, CL = 95%

$\chi_s > 0.49862$, CL = 95%

These branching fractions all scale with B($\overline{b} \rightarrow B_s^0$), the LEP B_s^0 production fraction. The first four were evaluated using B($\overline{b} \rightarrow B_s^0$) = (10.7 ± 1.4)% and the rest assume B($\overline{b} \rightarrow B_s^0$) = 12%.

The branching fraction B($B_s^0 \rightarrow D_s^- \ell^+ \nu_\ell$ anything) is not a pure measurement since the measured product branching fraction B($\overline{b} \rightarrow B_s^0$) × B($B_s^0 \rightarrow D_s^- \ell^+ \nu_\ell$ anything) was used to determine B($\overline{b} \rightarrow B_s^0$), as described in the note on "Production and Decay of b-Flavored Hadrons."

B_s^0 DECAY MODES		Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
D_s^- anything		(94 ± 30) %		–
$D_s^- \ell^+ \nu_\ell$ anything	[*iii*]	(7.9 ± 2.4) %		–
$D_s^- \pi^+$		< 13 %		2321
$D_s^{(*)+} D_s^{(*)-}$		(23 $^{+21}_{-13}$) %		–
$J/\psi(1S)\phi$		(9.3 ± 3.3) × 10^{-4}		1590
$J/\psi(1S)\pi^0$		< 1.2 × 10^{-3}	90%	1788
$J/\psi(1S)\eta$		< 3.8 × 10^{-3}	90%	1735
$\psi(2S)\phi$		seen		1122
$\pi^+\pi^-$		< 1.7 × 10^{-4}	90%	2681
$\pi^0\pi^0$		< 2.1 × 10^{-4}	90%	2681
$\eta\pi^0$		< 1.0 × 10^{-3}	90%	2655

$\eta\eta$		$<$	1.5	$\times 10^{-3}$	90%	2628
$\rho^0\rho^0$		$<$	3.20	$\times 10^{-4}$	90%	–
$\phi\rho^0$		$<$	6.17	$\times 10^{-4}$	90%	–
$\phi\phi$		$<$	1.183	$\times 10^{-3}$	90%	–
$\pi^+ K^-$		$<$	2.1	$\times 10^{-4}$	90%	2660
$K^+ K^-$		$<$	5.9	$\times 10^{-5}$	90%	2639
$\overline{K}^*(892)^0\rho^0$		$<$	7.67	$\times 10^{-4}$	90%	–
$\overline{K}^*(892)^0 K^*(892)^0$		$<$	1.681	$\times 10^{-3}$	90%	–
$\phi K^*(892)^0$		$<$	1.013	$\times 10^{-3}$	90%	–
$p\overline{p}$		$<$	5.9	$\times 10^{-5}$	90%	2515
$\gamma\gamma$		$<$	1.48	$\times 10^{-4}$	90%	2685
$\phi\gamma$		$<$	7	$\times 10^{-4}$	90%	2588

Lepton Family number (*LF*) violating modes or $\Delta B = 1$ weak neutral current (*B1*) modes

$\mu^+\mu^-$	*B1*		$<$ 2.0	$\times 10^{-6}$	90%	2682
$e^+ e^-$	*B1*		$<$ 5.4	$\times 10^{-5}$	90%	2864
$e^\pm\mu^\mp$	*LF*	[*ff*]	$<$ 6.1	$\times 10^{-6}$	90%	2864
$\phi\nu\overline{\nu}$	*B1*		$<$ 5.4	$\times 10^{-3}$	90%	–