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 $m_{B_s^0} = 5369.3 \pm 2.0$ MeV

Mean life $\tau = (1.54 \pm 0.07) \times 10^{-12}$ s

$c\tau = 462$ μm

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

χ_B at high energy $= f_d \chi_d + f_s \chi_s = 0.118 \pm 0.006$

$\Delta m_{B_s^0} = m_{B_{sH}^0} - m_{B_{sL}^0} > 9.1 \times 10^{12}\ \hbar\ \mathrm{s}^{-1}$, CL = 95%

$x_s = \Delta m_{B_s^0}/\Gamma_{B_s^0} > 14.0$, CL = 95%

$\chi_s > 0.4975$, CL = 95%

These branching fractions all scale with B($\overline{b} \to B_s^0$), the LEP B_s^0 production fraction. The first four were evaluated using B($\overline{b} \to B_s^0$) = $(10.5^{+1.8}_{-1.7})$% and the rest assume B($\overline{b} \to B_s^0$) = 12%.

The branching fraction B($B_s^0 \to D_s^- \ell^+ \nu_\ell$ anything) is not a pure measurement since the measured product branching fraction B($\overline{b} \to B_s^0$) $\times$ B($B_s^0 \to D_s^- \ell^+ \nu_\ell$ anything) was used to determine B($\overline{b} \to B_s^0$), 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			(92 ± 33) %		–
$D_s^- \ell^+ \nu_\ell$ anything		[ggg]	(8.1 ± 2.5) %		–
$D_s^- \pi^+$			< 13 %		2321
$J/\psi(1S)\phi$			$(9.3 \pm 3.3) \times 10^{-4}$		1590
$J/\psi(1S)\pi^0$			$< 1.2 \times 10^{-3}$	90%	1788
$J/\psi(1S)\eta$			$< 3.8 \times 10^{-3}$	90%	1735
$\psi(2S)\phi$			seen		1122
$\pi^+ \pi^-$			$< 1.7 \times 10^{-4}$	90%	1122
$\pi^0 \pi^0$			$< 2.1 \times 10^{-4}$	90%	2861
$\eta \pi^0$			$< 1.0 \times 10^{-3}$	90%	2655
$\eta \eta$			$< 1.5 \times 10^{-3}$	90%	2628
$\pi^+ K^-$			$< 2.1 \times 10^{-4}$	90%	2660
$K^+ K^-$			$< 5.9 \times 10^{-5}$	90%	2639
$p \overline{p}$			$< 5.9 \times 10^{-5}$	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*	[gg]	$< 4.1 \times 10^{-5}$	90%	2864
$\phi \nu \overline{\nu}$	*B1*		$< 5.4 \times 10^{-3}$	90%	–