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

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

B^0_s

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

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

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

Mean life $\tau = (1.493 \pm 0.062) \times 10^{-12}$ s

$c\tau = 448\ \mu$m

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

χ_B at high energy $= f_d \chi_d + f_s \chi_s = 0.118 \pm 0.005$

$\Delta m_{B^0_s} = m_{B^0_{sH}} - m_{B^0_{sL}} > 10.6 \times 10^{12}\ \hbar\ \text{s}^{-1}$, CL = 95%

$x_s = \Delta m_{B^0_s} / \Gamma_{B^0_s} > 15.7$, CL = 95%

$\chi_s > 0.4980$, CL = 95%

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

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

B^0_s DECAY MODES		Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
D^-_s anything		$(92 \pm 31)\ \%$		–
$D^-_s \ell^+ \nu_\ell$ anything	[ggg]	$(8.1 \pm 2.4)\ \%$		–
$D^-_s \pi^+$		$< 13\ \%$		2321
$D_s^{(*)+} D_s^{(*)-}$		$< 21.8\ \%$	90%	–
$J/\psi(1S)\phi$		$(9.3 \pm 3.3) \times 10^{-4}$		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
π^+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*	[*ee*]	$<$ 6.1	$\times 10^{-6}$	90%	2864
$\phi\nu\overline{\nu}$	*B1*		$<$ 5.4	$\times 10^{-3}$	90%	–