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 $m_{B_s^0} = 5366.88 \pm 0.17$ MeV

$m_{B_s^0} - m_B = 87.40 \pm 0.18$ MeV

Mean life $\tau = (1.510 \pm 0.004) \times 10^{-12}$ s

$c\tau = 452.7$ μm

$\Delta\Gamma_{B_s^0} = \Gamma_{B_{sL}^0} - \Gamma_{B_{sH}^0} = (0.090 \pm 0.005) \times 10^{12}$ s^{-1}

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

$\Delta m_{B_s^0} = m_{B_{sH}^0} - m_{B_{sL}^0} = (17.757 \pm 0.021) \times 10^{12}$ $\hbar$ s^{-1}

$= (1.1688 \pm 0.0014) \times 10^{-8}$ MeV

$x_s = \Delta m_{B_s^0}/\Gamma_{B_s^0} = 26.81 \pm 0.08$

$\chi_s = 0.499308 \pm 0.000004$

CP violation parameters in B_s^0

$\mathrm{Re}(\epsilon_{B_s^0}) / (1 + |\epsilon_{B_s^0}|^2) = (-0.15 \pm 0.70) \times 10^{-3}$

$C_{KK}(B_s^0 \to K^+ K^-) = 0.14 \pm 0.11$

$S_{KK}(B_s^0 \to K^+ K^-) = 0.30 \pm 0.13$

$r_B(B_s^0 \to D_s^\mp K^\pm) = 0.37^{+0.10}_{-0.09}$

$\delta_B(B_s^0 \to D_s^\pm K^\mp) = (358 \pm 14)^\circ$

CP Violation phase $\beta_s = (1.1 \pm 1.6) \times 10^{-2}$ rad

$|\lambda|$ $(B_s^0 \to J/\psi(1S)\phi) = 0.964 \pm 0.020$

$|\lambda| = 1.002 \pm 0.017$

A, *CP* violation parameter $= -0.75 \pm 0.12$

C, *CP* violation parameter $= 0.19 \pm 0.06$

S, *CP* violation parameter $= 0.17 \pm 0.06$

$A_{CP}^L(B_s \to J/\psi \overline{K}^*(892)^0) = -0.05 \pm 0.06$

$A_{CP}^\|(B_s \to J/\psi \overline{K}^*(892)^0) = 0.17 \pm 0.15$

$A_{CP}^\perp(B_s \to J/\psi \overline{K}^*(892)^0) = -0.05 \pm 0.10$

$\mathbf{A_{CP}(B_s \to \pi^+ K^-) = 0.221 \pm 0.015}$

$A_{CP}(B_s^0 \to [K^+ K^-]_D \overline{K}^*(892)^0) = -0.04 \pm 0.07$

$$A_{CP}(B_s^0 \rightarrow [\pi^+ K^-]_D K^*(892)^0) = -0.01 \pm 0.04$$
$$A_{CP}(B_s^0 \rightarrow [\pi^+ \pi^-]_D K^*(892)^0) = 0.06 \pm 0.13$$
$$A^\Delta(B_s \rightarrow \phi\gamma) = -1.0 \pm 0.5$$
$$\Delta a_\perp < 1.2 \times 10^{-12} \text{ GeV}, \text{ CL} = 95\%$$
$$\Delta a_\parallel = (-0.9 \pm 1.5) \times 10^{-14} \text{ GeV}$$
$$\Delta a_X = (1.0 \pm 2.2) \times 10^{-14} \text{ GeV}$$
$$\Delta a_Y = (-3.8 \pm 2.2) \times 10^{-14} \text{ GeV}$$
$$\text{Re}(\xi) = -0.022 \pm 0.033$$
$$\text{Im}(\xi) = 0.004 \pm 0.011$$

These branching fractions all scale with $B(\overline{b} \rightarrow B_s^0)$.

The branching fraction $B(B_s^0 \rightarrow D_s^- \ell^+ \nu_\ell \text{anything})$ is not a pure measurement since the measured product branching fraction $B(\overline{b} \rightarrow B_s^0) \times B(B_s^0 \rightarrow D_s^- \ell^+ \nu_\ell \text{anything})$ was used to determine $B(\overline{b} \rightarrow B_s^0)$, as described in the note on "B^0-$\overline{B}^0$ Mixing"

For inclusive branching fractions, *e.g.*, $B \rightarrow D^\pm$ anything, the values usually are multiplicities, not branching fractions. They can be greater than one.

B_s^0 DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
D_s^- anything		(93 ± 25) %		$-$
$\ell \nu_\ell X$		(9.6 $\pm$ 0.8) %		$-$
$e^+ \nu X^-$		(9.1 $\pm$ 0.8) %		$-$
$\mu^+ \nu X^-$		(10.2 $\pm$ 1.0) %		$-$
$D_s^- \ell^+ \nu_\ell$ anything	[a]	(8.1 $\pm$ 1.3) %		$-$
$D_s^{*-} \ell^+ \nu_\ell$ anything		(5.4 $\pm$ 1.1) %		$-$
$D_{s1}(2536)^- \mu^+ \nu_\mu$, $D_{s1}^- \rightarrow$ $D^{*-} K_S^0$		(2.6 $\pm$ 0.7) $\times 10^{-3}$		$-$
$D_{s1}(2536)^- X \mu^+ \nu$, $D_{s1}^- \rightarrow$ $\overline{D}^0 K^+$		(4.4 $\pm$ 1.3) $\times 10^{-3}$		$-$
$D_{s2}(2573)^- X \mu^+ \nu$, $D_{s2}^- \rightarrow$ $\overline{D}^0 K^+$		(2.7 $\pm$ 1.0) $\times 10^{-3}$		$-$
$D_s^- \pi^+$		(3.00$\pm$ 0.23) $\times 10^{-3}$		2320
$D_s^- \rho^+$		(6.9 $\pm$ 1.4) $\times 10^{-3}$		2249
$D_s^- \pi^+ \pi^+ \pi^-$		(6.1 $\pm$ 1.0) $\times 10^{-3}$		2301
$D_{s1}(2536)^- \pi^+$, $D_{s1}^- \rightarrow$ $D_s^- \pi^+ \pi^-$		(2.5 $\pm$ 0.8) $\times 10^{-5}$		$-$
$D_s^\mp K^\pm$		(2.27$\pm$ 0.19) $\times 10^{-4}$		2293
$D_s^- K^+ \pi^+ \pi^-$		(3.2 $\pm$ 0.6) $\times 10^{-4}$		2249
$D_s^+ D_s^-$		(4.4 $\pm$ 0.5) $\times 10^{-3}$		1824

$D_s^- D^+$	$(2.8 \pm 0.5) \times 10^{-4}$		1875
$D^+ D^-$	$(2.2 \pm 0.6) \times 10^{-4}$		1925
$D^0 \overline{D}^0$	$(1.9 \pm 0.5) \times 10^{-4}$		1930
$D_s^{*-} \pi^+$	$(2.0 \pm 0.5) \times 10^{-3}$		2265
$D_s^{*\mp} K^\pm$	$(1.33 \pm 0.35) \times 10^{-4}$		–
$D_s^{*-} \rho^+$	$(9.6 \pm 2.1) \times 10^{-3}$		2191
$D_s^{*+} D_s^- + D_s^{*-} D_s^+$	$(1.37 \pm 0.16) \, \%$		1742
$D_s^{*+} D_s^{*-}$	$(1.44 \pm 0.20) \, \%$	S=1.1	1655
$D_s^{(*)+} D_s^{(*)-}$	$(4.5 \pm 1.4) \, \%$		–
$\overline{D}^{*0} \overline{K}^0$	$(2.8 \pm 1.1) \times 10^{-4}$		2278
$\overline{D}^0 \overline{K}^0$	$(4.3 \pm 0.9) \times 10^{-4}$		2330
$\overline{D}^0 K^- \pi^+$	$(1.04 \pm 0.13) \times 10^{-3}$		2312
$\overline{D}^0 \overline{K}^*(892)^0$	$(4.4 \pm 0.6) \times 10^{-4}$		2264
$\overline{D}^0 \overline{K}^*(1410)$	$(3.9 \pm 3.5) \times 10^{-4}$		2117
$\overline{D}^0 \overline{K}_0^*(1430)$	$(3.0 \pm 0.7) \times 10^{-4}$		2113
$\overline{D}^0 \overline{K}_2^*(1430)$	$(1.1 \pm 0.4) \times 10^{-4}$		2113
$\overline{D}^0 \overline{K}^*(1680)$	$< 7.8 \times 10^{-5}$	CL=90%	1997
$\overline{D}^0 \overline{K}_0^*(1950)$	$< 1.1 \times 10^{-4}$	CL=90%	1890
$\overline{D}^0 \overline{K}_3^*(1780)$	$< 2.6 \times 10^{-5}$	CL=90%	1971
$\overline{D}^0 \overline{K}_4^*(2045)$	$< 3.1 \times 10^{-5}$	CL=90%	1837
$\overline{D}^0 K^- \pi^+$ (non-resonant)	$(2.1 \pm 0.8) \times 10^{-4}$		2312
$D_{s2}^*(2573)^- \pi^+, \; D_{s2}^* \to \overline{D}^0 K^-$	$(2.6 \pm 0.4) \times 10^{-4}$		–
$D_{s1}^*(2700)^- \pi^+, \; D_{s1}^* \to \overline{D}^0 K^-$	$(1.6 \pm 0.8) \times 10^{-5}$		–
$D_{s1}^*(2860)^- \pi^+, \; D_{s1}^* \to \overline{D}^0 K^-$	$(5 \pm 4) \times 10^{-5}$		–
$D_{s3}^*(2860)^- \pi^+, \; D_{s3}^* \to \overline{D}^0 K^-$	$(2.2 \pm 0.6) \times 10^{-5}$		–
$\overline{D}^0 K^+ K^-$	$(5.5 \pm 0.8) \times 10^{-5}$		2243
$\overline{D}^0 f_0(980)$	$< 3.1 \times 10^{-6}$	CL=90%	2242
$\overline{D}^0 \phi$	$(3.0 \pm 0.5) \times 10^{-5}$		2235
$\overline{D}^{*0} \phi$	$(3.7 \pm 0.6) \times 10^{-5}$		2178
$D^{*\mp} \pi^\pm$	$< 6.1 \times 10^{-6}$	CL=90%	–
$\eta_c \phi$	$(5.0 \pm 0.9) \times 10^{-4}$		1663
$\eta_c \pi^+ \pi^-$	$(1.8 \pm 0.7) \times 10^{-4}$		1840
$J/\psi(1S) \phi$	$(1.08 \pm 0.08) \times 10^{-3}$		1588
$J/\psi(1S) \phi \phi$	$(1.24 {}^{+\,0.17}_{-\,0.19}) \times 10^{-5}$		764
$J/\psi(1S) \pi^0$	$< 1.2 \times 10^{-3}$	CL=90%	1787
$J/\psi(1S) \eta$	$(4.0 \pm 0.7) \times 10^{-4}$	S=1.4	1733
$J/\psi(1S) K_S^0$	$(1.88 \pm 0.15) \times 10^{-5}$		1743
$J/\psi(1S) \overline{K}^*(892)^0$	$(4.1 \pm 0.4) \times 10^{-5}$		1637

$J/\psi(1S)\eta'$	$(\ 3.3\ \pm\ 0.4\ )\times 10^{-4}$		1612
$J/\psi(1S)\pi^+\pi^-$	$(\ 2.09\pm\ 0.23)\times 10^{-4}$	S=1.3	1775
$\quad J/\psi(1S)f_0(500),\ f_0 \to$	$<\ 4 \qquad\qquad \times 10^{-6}$	CL=90%	—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)\rho,\ \rho \to\ \pi^+\pi^-$	$<\ 4 \qquad\qquad \times 10^{-6}$	CL=90%	—
$\quad J/\psi(1S)f_0(980),\ f_0 \to$	$(\ 1.28\pm\ 0.18)\times 10^{-4}$	S=1.7	—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_2(1270),\ f_2 \to$	$(\ 1.1\ \pm\ 0.4\ )\times 10^{-6}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_2(1270)_0,\ f_2 \to$	$(\ 7.5\ \pm\ 1.8\ )\times 10^{-7}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_2(1270)_\parallel,\ f_2 \to$	$(\ 1.09\pm\ 0.34)\times 10^{-6}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_2(1270)_\perp,\ f_2 \to$	$(\ 1.3\ \pm\ 0.8\ )\times 10^{-6}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_0(1370),\ f_0 \to$	$(\ 4.5\ ^{+\ 0.7}_{-\ 4.0}\ )\times 10^{-5}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_0(1500),\ f_0 \to$	$(\ 2.11^{+\ 0.40}_{-\ 0.29})\times 10^{-5}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_2'(1525)_0,\ f_2' \to$	$(\ 1.07\pm\ 0.24)\times 10^{-6}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_2'(1525)_\parallel,\ f_2' \to$	$(\ 1.3\ ^{+\ 2.7}_{-\ 0.9}\ )\times 10^{-7}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_2'(1525)_\perp,\ f_2' \to$	$(\ 5\ \ \pm\ 4\ \ )\times 10^{-7}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)f_0(1790),\ f_0 \to$	$(\ 5.0\ ^{+11.0}_{-\ 1.1}\ )\times 10^{-6}$		—
$\quad\quad \pi^+\pi^-$			
$\quad J/\psi(1S)\pi^+\pi^-\text{(nonresonant)}$	$(\ 1.8\ ^{+\ 1.1}_{-\ 0.4}\ )\times 10^{-5}$		1775
$J/\psi(1S)\overline{K}^0\pi^+\pi^-$	$<\ 4.4 \qquad\qquad \times 10^{-5}$	CL=90%	1675
$J/\psi(1S)K^+K^-$	$(\ 7.9\ \pm\ 0.7\ )\times 10^{-4}$		1601
$J/\psi(1S)K^0K^-\pi^+ + \text{c.c.}$	$(\ 9.3\ \pm\ 1.3\ )\times 10^{-4}$		1538
$J/\psi(1S)\overline{K}^0K^+K^-$	$<\ 1.2 \qquad\qquad \times 10^{-5}$	CL=90%	1333
$J/\psi(1S)f_2'(1525)$	$(\ 2.6\ \pm\ 0.6\ )\times 10^{-4}$		1304
$J/\psi(1S)p\overline{p}$	$<\ 4.8 \qquad\qquad \times 10^{-6}$	CL=90%	982
$J/\psi(1S)\gamma$	$<\ 7.3 \qquad\qquad \times 10^{-6}$	CL=90%	1790
$J/\psi(1S)\pi^+\pi^-\pi^+\pi^-$	$(\ 7.8\ \pm\ 1.0\ )\times 10^{-5}$		1731
$J/\psi(1S)f_1(1285)$	$(\ 7.0\ \pm\ 1.4\ )\times 10^{-5}$		1460
$\psi(2S)\eta$	$(\ 3.3\ \pm\ 0.9\ )\times 10^{-4}$		1338
$\psi(2S)\eta'$	$(\ 1.29\pm\ 0.35)\times 10^{-4}$		1158
$\psi(2S)\pi^+\pi^-$	$(\ 7.1\ \pm\ 1.3\ )\times 10^{-5}$		1397
$\psi(2S)\phi$	$(\ 5.4\ \pm\ 0.6\ )\times 10^{-4}$		1120
$\psi(2S)K^-\pi^+$	$(\ 3.1\ \pm\ 0.4\ )\times 10^{-5}$		1310
$\psi(2S)\overline{K}^*(892)^0$	$(\ 3.3\ \pm\ 0.5\ )\times 10^{-5}$		1196
$\chi_{c1}\phi$	$(\ 2.04\pm\ 0.30)\times 10^{-4}$		1274

$\pi^+\pi^-$	$(\ 6.8\ \pm\ 0.8\ )\times 10^{-7}$		2680
$\pi^0\pi^0$	$<\ \ 2.1\ \ \ \times 10^{-4}$	CL=90%	2680
$\eta\pi^0$	$<\ \ 1.0\ \ \ \times 10^{-3}$	CL=90%	2654
$\eta\eta$	$<\ \ 1.5\ \ \ \times 10^{-3}$	CL=90%	2627
$\rho^0\rho^0$	$<\ \ 3.20\ \ \times 10^{-4}$	CL=90%	2569
$\eta'\eta'$	$(\ 3.3\ \pm\ 0.7\ )\times 10^{-5}$		2507
$\eta'\phi$	$<\ \ 8.2\ \ \ \times 10^{-7}$	CL=90%	2495
$\phi f_0(980),\ \ f_0(980)\to\ \pi^+\pi^-$	$(\ 1.12\pm\ 0.21)\times 10^{-6}$		−
$\phi f_2(1270),\ \ f_2(1270)\to\ \pi^+\pi^-$	$(\ 6.1\ {}^{+\ 1.8}_{-\ 1.5}\ )\times 10^{-7}$		−
$\phi\rho^0$	$(\ 2.7\ \pm\ 0.8\ )\times 10^{-7}$		2526
$\phi\pi^+\pi^-$	$(\ 3.5\ \pm\ 0.5\ )\times 10^{-6}$		2579
$\phi\phi$	$(\ 1.87\pm\ 0.15)\times 10^{-5}$		2482
$\phi\phi\phi$	$(\ 2.2\ \pm\ 0.7\ )\times 10^{-6}$		2165
π^+K^-	$(\ 5.6\ \pm\ 0.6\ )\times 10^{-6}$		2659
K^+K^-	$(\ 2.54\pm\ 0.17)\times 10^{-5}$		2638
$K^0\overline{K}{}^0$	$(\ 2.0\ \pm\ 0.6\ )\times 10^{-5}$		2637
$K^0\pi^+\pi^-$	$(\ 9.4\ \pm\ 2.1\ )\times 10^{-6}$		2653
$K^0K^\pm\pi^\mp$	$(\ 8.4\ \pm\ 0.9\ )\times 10^{-5}$		2622
$K^*(892)^-\pi^+$	$(\ 2.9\ \pm\ 1.1\ )\times 10^{-6}$		2607
$K^*(892)^\pm K^\mp$	$(\ 1.12\pm\ 0.22)\times 10^{-5}$		2585
$K^0_S\overline{K}{}^*(892)^0+$ c.c.	$(\ 1.6\ \pm\ 0.4\ )\times 10^{-5}$		2585
$K^0K^+K^-$	$(\ 1.3\ \pm\ 0.6\ )\times 10^{-6}$		2568
$\overline{K}{}^*(892)^0\rho^0$	$<\ \ 7.67\ \ \ \ \times 10^{-4}$	CL=90%	2550
$\overline{K}{}^*(892)^0K^*(892)^0$	$(\ 1.11\pm\ 0.27)\times 10^{-5}$		2531
$\phi K^*(892)^0$	$(\ 1.14\pm\ 0.30)\times 10^{-6}$		2507
$p\overline{p}$	$<\ \ 1.5\ \ \ \ \ \times 10^{-8}$	CL=90%	2514
$p\overline{p}K^+K^-$	$(\ 4.5\ \pm\ 0.5\ )\times 10^{-6}$		2231
$p\overline{p}K^+\pi^-$	$(\ 1.39\pm\ 0.26)\times 10^{-6}$		2355
$p\overline{p}\pi^+\pi^-$	$(\ 4.3\ \pm\ 2.0\ )\times 10^{-7}$		2454
$p\overline{\Lambda}K^-+$ c.c.	$(\ 5.5\ \pm\ 1.0\ )\times 10^{-6}$		2358
$\Lambda_c^-\Lambda\pi^+$	$(\ 3.6\ \pm\ 1.6\ )\times 10^{-4}$		−
$\Lambda_c^-\Lambda_c^+$	$<\ \ 8.0\ \ \ \ \ \times 10^{-5}$	CL=95%	−

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

$\gamma\gamma$	B1	$<\ \ 3.1\ \ \ \ \times 10^{-6}$	CL=90%	2683
$\phi\gamma$	B1	$(\ 3.4\ \pm\ 0.4\ )\times 10^{-5}$		2587
$\mu^+\mu^-$	B1	$(\ 3.0\ \pm\ 0.4\ )\times 10^{-9}$		2681
e^+e^-	B1	$<\ \ 2.8\ \ \ \ \times 10^{-7}$	CL=90%	2683
$\tau^+\tau^-$	B1	$<\ \ 6.8\ \ \ \ \times 10^{-3}$	CL=95%	2011
$\mu^+\mu^-\mu^+\mu^-$	B1	$<\ \ 2.5\ \ \ \ \times 10^{-9}$	CL=95%	2673
$SP,\ \ S\to\ \mu^+\mu^-,\ \ P\to\ \mu^+\mu^-$	B1	[b] $<\ \ 2.2\ \ \ \ \times 10^{-9}$	CL=95%	−

$\phi(1020)\mu^+\mu^-$	B1	$(\ 8.2\ \pm\ 1.2\ )\times 10^{-7}$		2582
$\overline{K}^*(892)^0\mu^+\mu^-$		$(\ 2.9\ \pm\ 1.1\ )\times 10^{-8}$		2605
$\pi^+\pi^-\mu^+\mu^-$	B1	$(\ 8.4\ \pm\ 1.7\ )\times 10^{-8}$		2670
$\phi\nu\overline{\nu}$	B1	$<\ 5.4\qquad\ \times 10^{-3}$	CL=90%	2587
$e^{\pm}\mu^{\mp}$	LF	$[c]\ <\ 5.4\qquad \times 10^{-9}$	CL=90%	2682

B_s^* $I(J^P) = 0(1^-)$

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

Mass $m = 5415.4^{+1.8}_{-1.5}$ MeV   (S = 2.9)

$m_{B_s^*} - m_{B_s} = 48.6^{+1.8}_{-1.5}$ MeV   (S = 2.9)

B_s^* DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$B_s\gamma$	seen	48

$B_{s1}(5830)^0$ $I(J^P) = 0(1^+)$
I, *J*, *P* need confirmation.

Mass $m = 5828.70 \pm 0.20$ MeV

$m_{B_{s1}^0} - m_{B^{*+}} = 504.00 \pm 0.17$ MeV

Full width $\Gamma = 0.5 \pm 0.4$ MeV

$B_{s1}(5830)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$B^{*+}K^-$	seen	97

$B_{s2}^*(5840)^0$ $I(J^P) = 0(2^+)$
I, *J*, *P* need confirmation.

Mass $m = 5839.85 \pm 0.12$ MeV

$m_{B_{s2}^{*0}} - m_{B^+} = 560.53 \pm 0.14$ MeV

Full width $\Gamma = 1.49 \pm 0.27$ MeV

$B_{s2}^*(5840)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
B^+K^-	**DEFINED AS 1**	252
$B^{*+}K^-$	0.093 ± 0.018	141
$B^0 K_S^0$	$0.43\ \pm 0.11$	245
$B^{*0} K_S^0$	$0.04\ \pm 0.04$	–

NOTES

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

[b] Here S and P are the hypothetical scalar and pseudoscalar particles with masses of 2.5 GeV/c^2 and 214.3 MeV/c^2, respectively.

[c] The value is for the sum of the charge states or particle/antiparticle states indicated.