$c\bar{c}$ MESONS

$\eta_c(1S)$

$I^G(J^{PC}) = 0^+(0^{-+})$

Mass $m = 2979.7 \pm 1.5$ MeV (S = 1.8)
Full width $\Gamma = 16.0^{+3.6}_{-3.2}$ MeV (S = 1.2)

$\eta_c(1S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
Decays involving hadronic resonances			
$\eta'(958)\pi\pi$	(4.1 ± 1.7) %		1319
$\rho\rho$	(2.6 ± 0.9) %		1275
$K^*(892)^0 K^-\pi^+ +$ c.c.	(2.0 ± 0.7) %		1273
$K^*(892)\overline{K}^*(892)$	$(8.5 \pm 3.1) \times 10^{-3}$		1193
$\phi\phi$	$(7.1 \pm 2.8) \times 10^{-3}$		1086
$a_0(980)\pi$	< 2 %	90%	1323
$a_2(1320)\pi$	< 2 %	90%	1193
$K^*(892)\overline{K} +$ c.c.	< 1.28 %	90%	1307
$f_2(1270)\eta$	< 1.1 %	90%	1142
$\omega\omega$	$< 3.1 \times 10^{-3}$	90%	1268
Decays into stable hadrons			
$K\overline{K}\pi$	(5.5 ± 1.7) %		1378
$\eta\pi\pi$	(4.9 ± 1.8) %		1425
$\pi^+\pi^- K^+ K^-$	$(2.0\ ^{+0.7}_{-0.6})$ %		1342
$2(K^+K^-)$	(2.1 ± 1.2) %		1053
$2(\pi^+\pi^-)$	(1.2 ± 0.4) %		1457
$p\overline{p}$	$(1.2 \pm 0.4) \times 10^{-3}$		1157
$K\overline{K}\eta$	< 3.1 %	90%	1262
$\pi^+\pi^- p\overline{p}$	< 1.2 %	90%	1023
$\Lambda\overline{\Lambda}$	$< 2 \times 10^{-3}$	90%	987
Radiative decays			
$\gamma\gamma$	$(3.0 \pm 1.2) \times 10^{-4}$		1489

$J/\psi(1S)$

$I^G(J^{PC}) = 0^-(1^{--})$

Mass $m = 3096.87 \pm 0.04$ MeV
Full width $\Gamma = 87 \pm 5$ keV
$\Gamma_{ee} = 5.26 \pm 0.37$ keV

$J/\psi(1S)$ DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
hadrons		(87.7 ±0.5) %		–
virtual $\gamma \rightarrow$ hadrons		(17.0 ±2.0) %		–
$e^+ e^-$		(5.93±0.10) %		1548
$\mu^+ \mu^-$		(5.88±0.10) %		1545
Decays involving hadronic resonances				
$\rho\pi$		(1.27±0.09) %		1449
$\rho^0 \pi^0$		(4.2 ±0.5) $\times 10^{-3}$		1449
$a_2(1320)\rho$		(1.09±0.22) %		1125
$\omega\pi^+\pi^+\pi^-\pi^-$		(8.5 ±3.4) $\times 10^{-3}$		1392
$\omega\pi^+\pi^-$		(7.2 ±1.0) $\times 10^{-3}$		1435
$\omega f_2(1270)$		(4.3 ±0.6) $\times 10^{-3}$		1143
$K^*(892)^0 \overline{K}{}^*_2(1430)^0 +$ c.c.		(6.7 ±2.6) $\times 10^{-3}$		1005
$\omega K^*(892)\overline{K} +$ c.c.		(5.3 ±2.0) $\times 10^{-3}$		1098
$K^+ \overline{K}{}^*(892)^- +$ c.c.		(5.0 ±0.4) $\times 10^{-3}$		1373
$K^0 \overline{K}{}^*(892)^0 +$ c.c.		(4.2 ±0.4) $\times 10^{-3}$		1371
$K_1(1400)^\pm K^\mp$		(3.8 ±1.4) $\times 10^{-3}$		–
$\omega\pi^0\pi^0$		(3.4 ±0.8) $\times 10^{-3}$		1436
$b_1(1235)^\pm \pi^\mp$	[ff]	(3.0 ±0.5) $\times 10^{-3}$		1299
$\omega K^\pm K^0_S \pi^\mp$	[ff]	(2.9 ±0.7) $\times 10^{-3}$		1210
$b_1(1235)^0 \pi^0$		(2.3 ±0.6) $\times 10^{-3}$		1299
$\phi K^*(892)\overline{K} +$ c.c.		(2.04±0.28) $\times 10^{-3}$		969
$\omega K \overline{K}$		(1.9 ±0.4) $\times 10^{-3}$		1268
$\omega f_0(1710) \rightarrow \omega K \overline{K}$		(4.8 ±1.1) $\times 10^{-4}$		878
$\phi 2(\pi^+\pi^-)$		(1.60±0.32) $\times 10^{-3}$		1318
$\Delta(1232)^{++} \overline{p}\pi^-$		(1.6 ±0.5) $\times 10^{-3}$		1030
$\omega\eta$		(1.58±0.16) $\times 10^{-3}$		1394
$\phi K \overline{K}$		(1.48±0.22) $\times 10^{-3}$		1179
$\phi f_0(1710) \rightarrow \phi K \overline{K}$		(3.6 ±0.6) $\times 10^{-4}$		875
$p\overline{p}\omega$		(1.30±0.25) $\times 10^{-3}$	S=1.3	769
$\Delta(1232)^{++} \overline{\Delta}(1232)^{--}$		(1.10±0.29) $\times 10^{-3}$		938
$\Sigma(1385)^- \overline{\Sigma}(1385)^+$ (or c.c.)	[ff]	(1.03±0.13) $\times 10^{-3}$		692
$p\overline{p}\eta'(958)$		(9 ±4) $\times 10^{-4}$	S=1.7	596
$\phi f'_2(1525)$		(8 ±4) $\times 10^{-4}$	S=2.7	871
$\phi\pi^+\pi^-$		(8.0 ±1.2) $\times 10^{-4}$		1365

$\phi K^{\pm} K_S^0 \pi^{\mp}$	[ff]	(7.2 ±0.9) × 10^{-4}			1114
$\omega f_1(1420)$		(6.8 ±2.4) × 10^{-4}			1062
$\phi\eta$		(6.5 ±0.7) × 10^{-4}			1320
$\Xi(1530)^- \overline{\Xi}^+$		(5.9 ±1.5) × 10^{-4}			597
$p K^- \overline{\Sigma}(1385)^0$		(5.1 ±3.2) × 10^{-4}			645
$\omega\pi^0$		(4.2 ±0.6) × 10^{-4}		S=1.4	1447
$\phi\eta'(958)$		(3.3 ±0.4) × 10^{-4}			1192
$\phi f_0(980)$		(3.2 ±0.9) × 10^{-4}		S=1.9	1182
$\Xi(1530)^0 \overline{\Xi}^0$		(3.2 ±1.4) × 10^{-4}			608
$\Sigma(1385)^- \overline{\Sigma}^+$ (or c.c.)	[ff]	(3.1 ±0.5) × 10^{-4}			857
$\phi f_1(1285)$		(2.6 ±0.5) × 10^{-4}		S=1.1	1032
$\rho\eta$		(1.93±0.23) × 10^{-4}			1398
$\omega\eta'(958)$		(1.67±0.25) × 10^{-4}			1279
$\omega f_0(980)$		(1.4 ±0.5) × 10^{-4}			1271
$\rho\eta'(958)$		(1.05±0.18) × 10^{-4}			1283
$p\overline{p}\phi$		(4.5 ±1.5) × 10^{-5}			527
$a_2(1320)^{\pm}\pi^{\mp}$	[ff]	< 4.3	× 10^{-3}	CL=90%	1263
$K\overline{K}_2^*(1430)+$ c.c.		< 4.0	× 10^{-3}	CL=90%	1159
$K_1(1270)^{\pm} K^{\mp}$		< 3.0	× 10^{-3}	CL=90%	–
$K_2^*(1430)^0 \overline{K}_2^*(1430)^0$		< 2.9	× 10^{-3}	CL=90%	588
$K^*(892)^0 \overline{K}^*(892)^0$		< 5	× 10^{-4}	CL=90%	1263
$\phi f_2(1270)$		< 3.7	× 10^{-4}	CL=90%	1036
$p\overline{p}\rho$		< 3.1	× 10^{-4}	CL=90%	779
$\phi\eta(1440) \rightarrow \phi\eta\pi\pi$		< 2.5	× 10^{-4}	CL=90%	946
$\omega f_2'(1525)$		< 2.2	× 10^{-4}	CL=90%	1003
$\Sigma(1385)^0 \overline{\Lambda}$		< 2	× 10^{-4}	CL=90%	911
$\Delta(1232)^+ \overline{p}$		< 1	× 10^{-4}	CL=90%	1100
$\Sigma^0 \overline{\Lambda}$		< 9	× 10^{-5}	CL=90%	1032
$\phi\pi^0$		< 6.8	× 10^{-6}	CL=90%	1377

Decays into stable hadrons

$2(\pi^+\pi^-)\pi^0$		(3.37±0.26) %			1496
$3(\pi^+\pi^-)\pi^0$		(2.9 ±0.6) %			1433
$\pi^+\pi^-\pi^0$		(1.50±0.20) %			1533
$\pi^+\pi^-\pi^0 K^+ K^-$		(1.20±0.30) %			1368
$4(\pi^+\pi^-)\pi^0$		(9.0 ±3.0) × 10^{-3}			1345
$\pi^+\pi^- K^+ K^-$		(7.2 ±2.3) × 10^{-3}			1407
$K\overline{K}\pi$		(6.1 ±1.0) × 10^{-3}			1440
$p\overline{p}\pi^+\pi^-$		(6.0 ±0.5) × 10^{-3}		S=1.3	1107
$2(\pi^+\pi^-)$		(4.0 ±1.0) × 10^{-3}			1517
$3(\pi^+\pi^-)$		(4.0 ±2.0) × 10^{-3}			1466
$n\overline{n}\pi^+\pi^-$		(4 ±4) × 10^{-3}			1106
$\Sigma^0 \overline{\Sigma}^0$		(1.27±0.17) × 10^{-3}			992
$2(\pi^+\pi^-) K^+ K^-$		(3.1 ±1.3) × 10^{-3}			1320

$p\overline{p}\pi^+\pi^-\pi^0$	[*jjj*]	$(2.3 \pm 0.9) \times 10^{-3}$	S=1.9	1033
$p\overline{p}$		$(2.12 \pm 0.10) \times 10^{-3}$		1232
$p\overline{p}\eta$		$(2.09 \pm 0.18) \times 10^{-3}$		948
$p\overline{n}\pi^-$		$(2.00 \pm 0.10) \times 10^{-3}$		1174
$n\overline{n}$		$(2.2 \pm 0.4) \times 10^{-3}$		1231
$\Xi\overline{\Xi}$		$(1.8 \pm 0.4) \times 10^{-3}$	S=1.8	818
$\Lambda\overline{\Lambda}$		$(1.30 \pm 0.12) \times 10^{-3}$	S=1.1	1074
$p\overline{p}\pi^0$		$(1.09 \pm 0.09) \times 10^{-3}$		1176
$\Lambda\overline{\Sigma}^-\pi^+$ (or c.c.)	[*ff*]	$(1.06 \pm 0.12) \times 10^{-3}$		945
$pK^-\overline{\Lambda}$		$(8.9 \pm 1.6) \times 10^{-4}$		876
$2(K^+K^-)$		$(7.0 \pm 3.0) \times 10^{-4}$		1131
$pK^-\overline{\Sigma}^0$		$(2.9 \pm 0.8) \times 10^{-4}$		820
K^+K^-		$(2.37 \pm 0.31) \times 10^{-4}$		1468
$\Lambda\overline{\Lambda}\pi^0$		$(2.2 \pm 0.6) \times 10^{-4}$		998
$\pi^+\pi^-$		$(1.47 \pm 0.23) \times 10^{-4}$		1542
$K^0_S K^0_L$		$(1.08 \pm 0.14) \times 10^{-4}$		1466
$\Lambda\overline{\Sigma}$ + c.c.		$< 1.5 \times 10^{-4}$	CL=90%	1032
$K^0_S K^0_S$		$< 5.2 \times 10^{-6}$	CL=90%	1466

Radiative decays

$\gamma\eta_c(1S)$		(1.3 ± 0.4) %		116
$\gamma\pi^+\pi^-2\pi^0$		$(8.3 \pm 3.1) \times 10^{-3}$		1518
$\gamma\eta\pi\pi$		$(6.1 \pm 1.0) \times 10^{-3}$		1487
$\gamma\eta(1440) \to \gamma K\overline{K}\pi$	[*p*]	$(9.7 \pm 1.7) \times 10^{-4}$		1223
$\gamma\eta(1440) \to \gamma\gamma\rho^0$		$(6.4 \pm 1.4) \times 10^{-5}$		1223
$\gamma\eta(1440) \to \gamma\eta\pi^+\pi^-$		$(3.0 \pm 0.5) \times 10^{-4}$		–
$\gamma\rho\rho$		$(4.5 \pm 0.8) \times 10^{-3}$		1343
$\gamma\eta_2(1870) \to \gamma\pi^+\pi^-$		$(6.2 \pm 2.4) \times 10^{-4}$		–
$\gamma\eta'(958)$		$(4.31 \pm 0.30) \times 10^{-3}$		1400
$\gamma 2\pi^+2\pi^-$		$(2.8 \pm 0.5) \times 10^{-3}$	S=1.9	1517
$\gamma K^+K^-\pi^+\pi^-$		$(2.1 \pm 0.6) \times 10^{-3}$		–
$\gamma f_4(2050)$		$(2.7 \pm 0.7) \times 10^{-3}$		874
$\gamma\omega\omega$		$(1.59 \pm 0.33) \times 10^{-3}$		1337
$\gamma\eta(1440) \to \gamma\rho^0\rho^0$		$(1.7 \pm 0.4) \times 10^{-3}$	S=1.3	1223
$\gamma f_2(1270)$		$(1.38 \pm 0.14) \times 10^{-3}$		1286
$\gamma f_0(1710) \to \gamma K\overline{K}$		$(8.5 \, {}^{+1.2}_{-0.9}) \times 10^{-4}$	S=1.2	1075
$\gamma\eta$		$(8.6 \pm 0.8) \times 10^{-4}$		1500
$\gamma f_1(1420) \to \gamma K\overline{K}\pi$		$(7.9 \pm 1.3) \times 10^{-4}$		1220
$\gamma f_1(1285)$		$(6.1 \pm 0.8) \times 10^{-4}$		1283
$\gamma f_1(1510) \to \gamma\eta\pi^+\pi^-$		$(4.5 \pm 1.2) \times 10^{-4}$		–
$\gamma f'_2(1525)$		$(4.7 \, {}^{+0.7}_{-0.5}) \times 10^{-4}$		1173

$\gamma f_2(1950) \rightarrow \gamma K^*(892)\overline{K}^*(892)$	$(7.0 \pm 2.2) \times 10^{-4}$		–
$\gamma K^*(892)\overline{K}^*(892)$	$(4.0 \pm 1.3) \times 10^{-3}$		–
$\gamma\phi\phi$	$(4.0 \pm 1.2) \times 10^{-4}$	S=2.1	1166
$\gamma p\overline{p}$	$(3.8 \pm 1.0) \times 10^{-4}$		1232
$\gamma\eta(2225)$	$(2.9 \pm 0.6) \times 10^{-4}$		834
$\gamma\eta(1760) \rightarrow \gamma\rho^0\rho^0$	$(1.3 \pm 0.9) \times 10^{-4}$		1048
$\gamma(K\overline{K}\pi)_{J^PC=0^{-+}}$	$(7 \pm 4) \times 10^{-4}$	S=2.1	–
$\gamma\pi^0$	$(3.9 \pm 1.3) \times 10^{-5}$		1546
$\gamma p\overline{p}\pi^+\pi^-$	$< 7.9 \times 10^{-4}$	CL=90%	1107
$\gamma\gamma$	$< 5 \times 10^{-4}$	CL=90%	1548
$\gamma\Lambda\overline{\Lambda}$	$< 1.3 \times 10^{-4}$	CL=90%	1074
3γ	$< 5.5 \times 10^{-5}$	CL=90%	1548
$\gamma f_J(2220)$	$> 2.50 \times 10^{-3}$	CL=99.9%	–
$\gamma f_J(2220) \rightarrow \gamma\pi\pi$	$(8 \pm 4) \times 10^{-5}$		–
$\gamma f_J(2220) \rightarrow \gamma K\overline{K}$	$(8.1 \pm 3.0) \times 10^{-5}$		–
$\gamma f_J(2220) \rightarrow \gamma p\overline{p}$	$(1.5 \pm 0.8) \times 10^{-5}$		–
$\gamma f_0(1500)$	$<(5.7 \pm 0.8) \times 10^{-4}$		1184
γe^+e^-	$(8.8 \pm 1.4) \times 10^{-3}$		–

$\chi_{c0}(1P)$

$I^G(J^{PC}) = 0^+(0^{++})$

Mass $m = 3415.1 \pm 0.8$ MeV
Full width $\Gamma = 16.2 \pm 2.3$ MeV

$\chi_{c0}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Hadronic decays			
$2(\pi^+\pi^-)$	(2.44±0.33) %		1679
$\pi^+\pi^-K^+K^-$	(1.8 ±0.6) %	S=1.9	1580
$\rho^0\pi^+\pi^-$	(1.6 ±0.5) %		1608
$3(\pi^+\pi^-)$	(1.24±0.22) %		1633
$K^+\overline{K}^*(892)^0\pi^-$ + c.c.	(1.2 ±0.4) %		1522
K^+K^-	$(5.9 \pm 0.9) \times 10^{-3}$		1635
$\pi^+\pi^-$	$(5.0 \pm 0.7) \times 10^{-3}$		1702
$K^+K^-K^+K^-$	$(2.1 \pm 0.5) \times 10^{-3}$		–
$K^0_SK^0_S$	$(2.0 \pm 0.6) \times 10^{-3}$		–
$\pi^+\pi^-p\overline{p}$	$(1.8 \pm 0.9) \times 10^{-3}$	S=1.6	1320
$\phi\phi$	$(9 \pm 5) \times 10^{-4}$		–
$p\overline{p}$	$(2.2 \pm 0.5) \times 10^{-4}$		1427
$K^0_SK^+\pi^-$ + c.c.	$< 7.1 \times 10^{-4}$	CL=90%	–

Radiative decays

$\gamma J/\psi(1S)$	(1.02±0.17) %	303
$\gamma\gamma$	(1.9 ±0.4) × 10^{-4}	1708

$\chi_{c1}(1P)$

$I^G(J^{PC}) = 0^+(1^{++})$

Mass m = 3510.51 ± 0.12 MeV
Full width Γ = 0.92 ± 0.13 MeV

$\chi_{c1}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor	p (MeV/c)
Hadronic decays			
$3(\pi^+\pi^-)$	(6.3±1.4) × 10^{-3}		1683
$2(\pi^+\pi^-)$	(5.6±2.6) × 10^{-3}	2.2	1727
$\pi^+\pi^- K^+ K^-$	(4.9±1.2) × 10^{-3}	1.1	1632
$\rho^0\pi^+\pi^-$	(3.9±3.5) × 10^{-3}		1659
$K^+\overline{K}^*(892)^0\pi^-$ + c.c.	(3.2±2.1) × 10^{-3}		1576
$K^0_S K^+\pi^-$	(2.5±0.8) × 10^{-3}		–
$\pi^+\pi^- p\overline{p}$	(5.4±2.1) × 10^{-4}		1381
$K^+K^-K^+K^-$	(4.2±1.9) × 10^{-4}		–
$p\overline{p}$	(7.2±1.3) × 10^{-5}		1483
$\pi^+\pi^-$ + K^+K^-	< 2.1 × 10^{-3}		–
Radiative decays			
$\gamma J/\psi(1S)$	(31.6±3.2) %		389

$\chi_{c2}(1P)$

$I^G(J^{PC}) = 0^+(2^{++})$

Mass m = 3556.18 ± 0.13 MeV
Full width Γ = 2.08 ± 0.17 MeV

$\chi_{c2}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Hadronic decays			
$2(\pi^+\pi^-)$	(1.41±0.20) %		1751
$\pi^+\pi^- K^+ K^-$	(10 ±4) × 10^{-3}	S=2.0	1656
$3(\pi^+\pi^-)$	(9.2 ±2.2) × 10^{-3}		1707
$\rho^0\pi^+\pi^-$	(7 ±4) × 10^{-3}		1683
$K^+\overline{K}^*(892)^0\pi^-$ + c.c.	(4.8 ±2.8) × 10^{-3}		1601
$\phi\phi$	(2.0 ±0.8) × 10^{-3}		–
$\pi^+\pi^-$	(1.52±0.25) × 10^{-3}		1773

$K^+K^-K^+K^-$	$(\ 1.5\ \pm0.4\ )\times10^{-3}$			–
$\pi^+\pi^-p\overline{p}$	$(\ 1.4\ \pm0.6\ )\times10^{-3}$		S=1.5	1410
K^+K^-	$(\ 8.1\ \pm1.9\ )\times10^{-4}$			1708
$K^0_SK^0_S$	$(\ 6.1\ \pm2.3\ )\times10^{-4}$			–
$p\overline{p}$	$(\ 7.4\ \pm1.0\ )\times10^{-5}$			1510
$J/\psi(1S)\pi^+\pi^-\pi^0$	$<\ 1.5$	%	CL=90%	185
$K^0_SK^+\pi^-$ + c.c.	$<\ 1.06$	$\times10^{-3}$	CL=90%	–

Radiative decays

$\gamma J/\psi(1S)$	$(18.7\ \pm2.0\ )$ %			430
$\gamma\gamma$	$(\ 2.19\pm0.32)\times10^{-4}$			1778

$\psi(2S)$

$I^G(J^{PC}) = 0^-(1^{--})$

Mass $m = 3685.96 \pm 0.09$ MeV
Full width $\Gamma = 300 \pm 25$ keV
$\Gamma_{ee} = 2.19 \pm 0.15$ keV

$\psi(2S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
hadrons	(98.10 ± 0.30) %		–
virtual $\gamma\ \rightarrow$ hadrons	$(\ 2.9\ \pm0.4\ )$ %		–
e^+e^-	$(\ 7.3\ \pm0.4\ )\times10^{-3}$		1843
$\mu^+\mu^-$	$(\ 7.0\ \pm0.9\ )\times10^{-3}$		1840
$\tau^+\tau^-$	$(\ 2.7\ \pm0.7\ )\times10^{-3}$		–

Decays into $J/\psi(1S)$ and anything

$J/\psi(1S)$ anything	$(55.7\ \pm2.6\ )$ %			–
$J/\psi(1S)$ neutrals	$(23.9\ \pm1.2\ )$ %			–
$J/\psi(1S)\pi^+\pi^-$	$(30.5\ \pm1.6\ )$ %			477
$J/\psi(1S)\pi^0\pi^0$	$(18.2\ \pm1.2\ )$ %			481
$J/\psi(1S)\eta$	$(\ 3.13\pm0.21)$ %			200
$J/\psi(1S)\pi^0$	$(\ 9.6\ \pm2.1\ )\times10^{-4}$			527

Hadronic decays

$3(\pi^+\pi^-)\pi^0$	$(\ 3.5\ \pm1.6\ )\times10^{-3}$			1746
$2(\pi^+\pi^-)\pi^0$	$(\ 3.0\ \pm0.8\ )\times10^{-3}$			1799
$\omega f_2(1270)$	$<\ 1.7$	$\times10^{-4}$	90%	–
$\rho a_2(1320)$	$<\ 2.3$	$\times10^{-4}$	90%	–
$\pi^+\pi^-K^+K^-$	$(\ 1.6\ \pm0.4\ )\times10^{-3}$			1726
$K^*(892)\overline{K}^*_2(1430)^0$	$<\ 1.2$	$\times10^{-4}$	90%	–
$K_1(1270)^\pm K^\mp$	$(\ 1.00\pm0.28)\times10^{-3}$			–
$\pi^+\pi^-p\overline{p}$	$(\ 8.0\ \pm2.0\ )\times10^{-4}$			1491
$K^+\overline{K}^*(892)^0\pi^-$ + c.c.	$(\ 6.7\ \pm2.5\ )\times10^{-4}$			1673
$b_1^\pm\pi^\mp$	$(\ 5.2\ \pm1.3\ )\times10^{-4}$			–

$2(\pi^+\pi^-)$	(4.5 ±1.0) × 10^{-4}			1817
$\rho^0\pi^+\pi^-$	(4.2 ±1.5) × 10^{-4}			1751
$\overline{p}p$	(2.07±0.31) × 10^{-4}			1586
$\Lambda\overline{\Lambda}$	(1.81±0.34) × 10^{-4}			1467
$3(\pi^+\pi^-)$	(1.5 ±1.0) × 10^{-4}			1774
$\overline{p}p\pi^0$	(1.4 ±0.5) × 10^{-4}			1543
$\Delta^{++}\overline{\Delta}^{--}$	(1.28±0.35) × 10^{-4}			–
$\Sigma^0\overline{\Sigma}^0$	(1.2 ±0.6) × 10^{-4}			–
$\Sigma^{*+}\overline{\Sigma}^{*-}$	(1.1 ±0.4) × 10^{-4}			–
K^+K^-	(1.0 ±0.7) × 10^{-4}			1776
$\pi^+\pi^-\pi^0$	(8 ±5) × 10^{-5}			1830
$\rho\pi$	< 8.3	× 10^{-5}	90%	1760
$\pi^+\pi^-$	(8 ±5) × 10^{-5}			1838
$\Xi^-\overline{\Xi}^+$	(9.4 ±3.1) × 10^{-5}			1285
$K_1(1400)^\pm K^\mp$	< 3.1	× 10^{-4}	90%	–
$\Xi^{*0}\overline{\Xi}^{*0}$	< 8.1	× 10^{-5}	90%	–
$\Omega^-\overline{\Omega}^+$	< 7.3	× 10^{-5}	90%	–
$K^+K^-\pi^0$	< 2.96	× 10^{-5}	90%	1754
$K^+\overline{K}^*(892)^-$ + c.c.	< 5.4	× 10^{-5}	90%	1698
$\phi f_2'(1525)$	< 4.5	× 10^{-5}	90%	–

Radiative decays

$\gamma\chi_{c0}(1P)$	(8.7 ±0.8) %			261
$\gamma\chi_{c1}(1P)$	(8.4 ±0.7) %			171
$\gamma\chi_{c2}(1P)$	(6.8 ±0.6) %			127
$\gamma\eta_c(1S)$	(2.8 ±0.6) × 10^{-3}			639
$\gamma\eta'(958)$	(1.5 ±0.4) × 10^{-4}			1719
$\gamma\gamma$	< 1.4	× 10^{-4}	90%	1843
$\gamma\eta$	< 9	× 10^{-5}	90%	1802
$\gamma\eta(1440) \to \gamma K\overline{K}\pi$	< 1.2	× 10^{-4}	90%	1569

$\psi(3770)$

$I^G(J^{PC}) = 0^-(1^{--})$

Mass m = 3769.9 ± 2.5 MeV (S = 1.8)
Full width Γ = 23.6 ± 2.7 MeV (S = 1.1)
Γ_{ee} = 0.26 ± 0.04 keV (S = 1.2)

$\psi(3770)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor	p (MeV/c)
$D\overline{D}$	dominant		242
e^+e^-	(1.12±0.17) × 10^{-5}	1.2	1885

$\psi(4040)$ [kkk]

$I^G(J^{PC}) = 0^-(1^{--})$

Mass $m = 4040 \pm 10$ MeV
Full width $\Gamma = 52 \pm 10$ MeV
$\Gamma_{ee} = 0.75 \pm 0.15$ keV

$\psi(4040)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$e^+ e^-$	$(1.4 \pm 0.4) \times 10^{-5}$	2020
$D^0 \overline{D}^0$	seen	777
$D^*(2007)^0 \overline{D}^0 +$ c.c.	seen	578
$D^*(2007)^0 \overline{D}^*(2007)^0$	seen	232

$\psi(4160)$ [kkk]

$I^G(J^{PC}) = 0^-(1^{--})$

Mass $m = 4159 \pm 20$ MeV
Full width $\Gamma = 78 \pm 20$ MeV
$\Gamma_{ee} = 0.77 \pm 0.23$ keV

$\psi(4160)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$e^+ e^-$	$(10 \pm 4) \times 10^{-6}$	2079

$\psi(4415)$ [kkk]

$I^G(J^{PC}) = 0^-(1^{--})$

Mass $m = 4415 \pm 6$ MeV
Full width $\Gamma = 43 \pm 15$ MeV (S = 1.8)
$\Gamma_{ee} = 0.47 \pm 0.10$ keV

$\psi(4415)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
hadrons	dominant	–
$e^+ e^-$	$(1.1 \pm 0.4) \times 10^{-5}$	2207