$c\overline{c}$ MESONS

NODE=MXXX025

$\eta_c(1S)$

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

NODE=M026

Mass $m = 2983.7 \pm 0.7$ MeV (S = 1.4)
Full width $\Gamma = 32.0 \pm 0.9$ MeV

NODE=M026M;DTYPE=M
NODE=M026W;DTYPE=G

$\eta_c(1S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
Decays involving hadronic resonances				NODE=M026215;NODE=M026;CLUMP=A
$\eta'(958)\pi\pi$	(4.1 ± 1.7) %		1323	DESIG=24
$\rho\rho$	(1.8 ± 0.5) %		1275	DESIG=19
$K^*(892)^0 K^-\pi^+$ + c.c.	(2.0 ± 0.7) %		1277	DESIG=26
$K^*(892)\overline{K}^*(892)$	$(7.1 \pm 1.3) \times 10^{-3}$		1196	DESIG=18
$K^{*0}\overline{K}^{*0}\pi^+\pi^-$	(1.1 ± 0.5) %		1073	DESIG=57
ϕK^+K^-	$(2.9 \pm 1.4) \times 10^{-3}$		1104	DESIG=28
$\phi\phi$	$(1.76 \pm 0.20) \times 10^{-3}$		1089	DESIG=17
$\phi 2(\pi^+\pi^-)$	$< 3.5 \times 10^{-3}$	90%	1251	DESIG=58
$a_0(980)\pi$	< 2 %	90%	1327	DESIG=21
$a_2(1320)\pi$	< 2 %	90%	1196	DESIG=22
$K^*(892)\overline{K}$ + c.c.	< 1.28 %	90%	1309	DESIG=40
$f_2(1270)\eta$	< 1.1 %	90%	1145	DESIG=23
$\omega\omega$	$< 3.1 \times 10^{-3}$	90%	1270	DESIG=20
$\omega\phi$	$< 1.7 \times 10^{-3}$	90%	1185	DESIG=47
$f_2(1270)f_2(1270)$	$(9.8 \pm 2.5) \times 10^{-3}$		774	DESIG=46
$f_2(1270)f'_2(1525)$	$(9.7 \pm 3.2) \times 10^{-3}$		513	DESIG=59
Decays into stable hadrons				NODE=M026;CLUMP=B
$K\overline{K}\pi$	(7.3 ± 0.5) %		1381	DESIG=14
$\eta\pi^+\pi^-$	(1.7 ± 0.5) %		1428	DESIG=16
$\eta 2(\pi^+\pi^-)$	(4.4 ± 1.3) %		1386	DESIG=61
$K^+K^-\pi^+\pi^-$	$(6.9 \pm 1.1) \times 10^{-3}$		1345	DESIG=15
$K^+K^-\pi^+\pi^-\pi^0$	(3.5 ± 0.6) %		1304	DESIG=60
$K^0K^-\pi^+\pi^-\pi^+$ +c.c.	(5.6 ± 1.5) %		–	DESIG=62
$K^+K^-2(\pi^+\pi^-)$	$(7.5 \pm 2.4) \times 10^{-3}$		1254	DESIG=55
$2(K^+K^-)$	$(1.47 \pm 0.31) \times 10^{-3}$		1055	DESIG=27
$\pi^+\pi^-\pi^0\pi^0$	(4.7 ± 1.0) %		1460	DESIG=63
$2(\pi^+\pi^-)$	$(9.7 \pm 1.2) \times 10^{-3}$		1459	DESIG=11
$2(\pi^+\pi^-\pi^0)$	(17.4 ± 3.3) %		1409	DESIG=64
$3(\pi^+\pi^-)$	(1.7 ± 0.4) %		1407	DESIG=56
$p\overline{p}$	$(1.51 \pm 0.16) \times 10^{-3}$		1160	DESIG=12
$p\overline{p}\pi^0$	$(3.6 \pm 1.3) \times 10^{-3}$		1101	DESIG=65
$\Lambda\overline{\Lambda}$	$(1.09 \pm 0.24) \times 10^{-3}$		990	DESIG=45
$K\overline{K}\eta$	$(10 \pm 5) \times 10^{-3}$		1265	DESIG=25
$\pi^+\pi^-p\overline{p}$	$(5.3 \pm 1.8) \times 10^{-3}$		1027	DESIG=13
Radiative decays				NODE=M026;CLUMP=C
$\gamma\gamma$	$(1.57 \pm 0.12) \times 10^{-4}$		1492	DESIG=31
Charge conjugation (C), Parity (P), Lepton family number (LF) violating modes				NODE=M026;CLUMP=D
$\pi^+\pi^-$	$P,CP < 1.1 \times 10^{-4}$	90%	1485	DESIG=51
$\pi^0\pi^0$	$P,CP < 3.5 \times 10^{-5}$	90%	1486	DESIG=52
K^+K^-	$P,CP < 6 \times 10^{-4}$	90%	1408	DESIG=53
$K^0_SK^0_S$	$P,CP < 3.1 \times 10^{-4}$	90%	1406	DESIG=54

$J/\psi(1S)$

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

NODE=M070

Mass $m = 3096.916 \pm 0.011$ MeV
Full width $\Gamma = 92.9 \pm 2.8$ keV (S = 1.1)
$\Gamma_{ee} = 5.55 \pm 0.14 \pm 0.02$ keV

NODE=M070M;DTYPE=M
NODE=M070W;DTYPE=G
NODE=M070W1;DTYPE=E;OUR EVAL;
→ UNCHECKED ←

$J/\psi(1S)$ DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
hadrons		(87.7 ± 0.5) %		–	NODE=M070215;DESIG=3
virtual $\gamma \to$ hadrons		(13.50 ± 0.30) %		–	DESIG=4
$g\,g\,g$		(64.1 ± 1.0) %		–	DESIG=249
$\gamma\,g\,g$		(8.8 ± 1.1) %		–	DESIG=250
$e^+ e^-$		(5.94 ± 0.06) %		1548	DESIG=1
$e^+ e^- \gamma$	[a]	$(8.8 \pm 1.4) \times 10^{-3}$		1548	DESIG=5
$\mu^+ \mu^-$		(5.93 ± 0.06) %		1545	DESIG=2
Decays involving hadronic resonances					NODE=M070;CLUMP=A
$\rho\pi$		(1.69 ± 0.15) %	S=2.4	1448	DESIG=20
$\rho^0 \pi^0$		$(5.6 \pm 0.7) \times 10^{-3}$		1448	DESIG=21
$a_2(1320)\rho$		(1.09 ± 0.22) %		1123	DESIG=43
$\omega\pi^+\pi^+\pi^-\pi^-$		$(8.5 \pm 3.4) \times 10^{-3}$		1392	DESIG=26
$\omega\pi^+\pi^-\pi^0$		$(4.0 \pm 0.7) \times 10^{-3}$		1418	DESIG=211
$\omega\pi^+\pi^-$		$(8.6 \pm 0.7) \times 10^{-3}$	S=1.1	1435	DESIG=24
$\omega f_2(1270)$		$(4.3 \pm 0.6) \times 10^{-3}$		1142	DESIG=28
$K^*(892)^0 \overline{K}^*(892)^0$		$(2.3 \pm 0.7) \times 10^{-4}$		1266	DESIG=46
$K^*(892)^\pm \overline{K}^*(892)^\mp$		$(1.00 {}^{+0.22}_{-0.40}) \times 10^{-3}$		1266	DESIG=256
$K^*(892)^\pm \overline{K}^*(800)^\mp$		$(1.1 {}^{+1.0}_{-0.6}) \times 10^{-3}$		–	DESIG=257
$\eta K^*(892)^0 \overline{K}^*(892)^0$		$(1.15 \pm 0.26) \times 10^{-3}$		1003	DESIG=252
$K^*(892)^0 \overline{K}_2^*(1430)^0 +$ c.c.		$(6.0 \pm 0.6) \times 10^{-3}$		1012	DESIG=48
$K^*(892)^0 \overline{K}_2(1770)^0 +$ c.c. $\to$ $K^*(892)^0 K^- \pi^+ +$ c.c.		$(6.9 \pm 0.9) \times 10^{-4}$		–	DESIG=235
$\omega K^*(892) \overline{K} +$ c.c.		$(6.1 \pm 0.9) \times 10^{-3}$		1097	DESIG=102
$K^+ \overline{K}^*(892)^- +$ c.c.		$(5.12 \pm 0.30) \times 10^{-3}$		1373	DESIG=121
$K^+ \overline{K}^*(892)^- +$ c.c. $\to$ $K^+ K^- \pi^0$		$(1.97 \pm 0.20) \times 10^{-3}$		–	DESIG=231
$K^+ \overline{K}^*(892)^- +$ c.c. $\to$ $K^0 K^\pm \pi^\mp$		$(3.0 \pm 0.4) \times 10^{-3}$		–	DESIG=232
$K^0 \overline{K}^*(892)^0 +$ c.c.		$(4.39 \pm 0.31) \times 10^{-3}$		1373	DESIG=122
$K^0 \overline{K}^*(892)^0 +$ c.c. $\to$ $K^0 K^\pm \pi^\mp$		$(3.2 \pm 0.4) \times 10^{-3}$		–	DESIG=233
$K_1(1400)^\pm K^\mp$		$(3.8 \pm 1.4) \times 10^{-3}$		1170	DESIG=132
$\overline{K}^*(892)^0 K^+ \pi^- +$ c.c.		seen		1343	DESIG=214
$\omega\pi^0\pi^0$		$(3.4 \pm 0.8) \times 10^{-3}$		1436	DESIG=140
$b_1(1235)^\pm \pi^\mp$	[b]	$(3.0 \pm 0.5) \times 10^{-3}$		1300	DESIG=49
$\omega K^\pm K_S^0 \pi^\mp$	[b]	$(3.4 \pm 0.5) \times 10^{-3}$		1210	DESIG=101
$b_1(1235)^0 \pi^0$		$(2.3 \pm 0.6) \times 10^{-3}$		1300	DESIG=160
$\eta K^\pm K_S^0 \pi^\mp$	[b]	$(2.2 \pm 0.4) \times 10^{-3}$		1278	DESIG=230
$\phi K^*(892) \overline{K} +$ c.c.		$(2.18 \pm 0.23) \times 10^{-3}$		969	DESIG=104
$\omega K \overline{K}$		$(1.70 \pm 0.32) \times 10^{-3}$		1268	DESIG=27
$\omega f_0(1710) \to \omega K \overline{K}$		$(4.8 \pm 1.1) \times 10^{-4}$		878	DESIG=130
$\phi 2(\pi^+\pi^-)$		$(1.66 \pm 0.23) \times 10^{-3}$		1318	DESIG=35
$\Delta(1232)^{++} \overline{p}\pi^-$		$(1.6 \pm 0.5) \times 10^{-3}$		1030	DESIG=70
$\omega\eta$		$(1.74 \pm 0.20) \times 10^{-3}$	S=1.6	1394	DESIG=30
$\phi K \overline{K}$		$(1.83 \pm 0.24) \times 10^{-3}$	S=1.5	1179	DESIG=36
$\phi f_0(1710) \to \phi K \overline{K}$		$(3.6 \pm 0.6) \times 10^{-4}$		875	DESIG=129
$\phi f_2(1270)$		$(7.2 \pm 1.3) \times 10^{-4}$		1036	DESIG=39
$\Delta(1232)^{++} \overline{\Delta}(1232)^{--}$		$(1.10 \pm 0.29) \times 10^{-3}$		938	DESIG=66
$\Sigma(1385)^- \overline{\Sigma}(1385)^+$ (or c.c.)	[b]	$(1.10 \pm 0.12) \times 10^{-3}$		697	DESIG=67
$\phi f_2'(1525)$		$(8 \pm 4) \times 10^{-4}$	S=2.7	871	DESIG=40
$\phi\pi^+\pi^-$		$(9.4 \pm 0.9) \times 10^{-4}$	S=1.2	1365	DESIG=34
$\phi\pi^0\pi^0$		$(5.6 \pm 1.6) \times 10^{-4}$		1366	DESIG=76
$\phi K^\pm K_S^0 \pi^\mp$	[b]	$(7.2 \pm 0.8) \times 10^{-4}$		1114	DESIG=103
$\omega f_1(1420)$		$(6.8 \pm 2.4) \times 10^{-4}$		1062	DESIG=105
$\phi\eta$		$(7.5 \pm 0.8) \times 10^{-4}$	S=1.5	1320	DESIG=37

$\Xi^0 \overline{\Xi}^0$		$(1.20 \pm 0.24) \times 10^{-3}$		818	DESIG=248
$\Xi(1530)^- \overline{\Xi}^+$		$(5.9 \pm 1.5) \times 10^{-4}$		600	DESIG=107
$p K^- \overline{\Sigma}(1385)^0$		$(5.1 \pm 3.2) \times 10^{-4}$		646	DESIG=74
$\omega \pi^0$		$(4.5 \pm 0.5) \times 10^{-4}$	S=1.4	1446	DESIG=32
$\phi \eta'(958)$		$(4.0 \pm 0.7) \times 10^{-4}$	S=2.1	1192	DESIG=38
$\phi f_0(980)$		$(3.2 \pm 0.9) \times 10^{-4}$	S=1.9	1178	DESIG=41
$\phi f_0(980) \rightarrow \phi \pi^+ \pi^-$		$(1.8 \pm 0.4) \times 10^{-4}$		–	DESIG=236
$\phi f_0(980) \rightarrow \phi \pi^0 \pi^0$		$(1.7 \pm 0.7) \times 10^{-4}$		–	DESIG=237
$\eta \phi f_0(980) \rightarrow \eta \phi \pi^+ \pi^-$		$(3.2 \pm 1.0) \times 10^{-4}$		–	DESIG=229
$\phi a_0(980)^0 \rightarrow \phi \eta \pi^0$		$(5 \pm 4) \times 10^{-6}$		–	DESIG=258
$\Xi(1530)^0 \overline{\Xi}^0$		$(3.2 \pm 1.4) \times 10^{-4}$		608	DESIG=108
$\Sigma(1385)^- \overline{\Sigma}^+$ (or c.c.)	[b]	$(3.1 \pm 0.5) \times 10^{-4}$		855	DESIG=68
$\phi f_1(1285)$		$(2.6 \pm 0.5) \times 10^{-4}$	S=1.1	1032	DESIG=106
$\eta \pi^+ \pi^-$		$(4.0 \pm 1.7) \times 10^{-4}$		1487	DESIG=239
$\rho \eta$		$(1.93 \pm 0.23) \times 10^{-4}$		1396	DESIG=22
$\omega \eta'(958)$		$(1.82 \pm 0.21) \times 10^{-4}$		1279	DESIG=31
$\omega f_0(980)$		$(1.4 \pm 0.5) \times 10^{-4}$		1267	DESIG=150
$\rho \eta'(958)$		$(1.05 \pm 0.18) \times 10^{-4}$		1281	DESIG=23
$a_2(1320)^\pm \pi^\mp$	[b]	$< 4.3 \times 10^{-3}$	CL=90%	1263	DESIG=42
$K \overline{K}_2^*(1430) +$ c.c.		$< 4.0 \times 10^{-3}$	CL=90%	1159	DESIG=45
$K_1(1270)^\pm K^\mp$		$< 3.0 \times 10^{-3}$	CL=90%	1231	DESIG=131
$K_2^*(1430)^0 \overline{K}_2^*(1430)^0$		$< 2.9 \times 10^{-3}$	CL=90%	604	DESIG=47
$\phi \pi^0$		$< 6.4 \times 10^{-6}$	CL=90%	1377	DESIG=33
$\phi \eta(1405) \rightarrow \phi \eta \pi \pi$		$< 2.5 \times 10^{-4}$	CL=90%	946	DESIG=128
$\omega f_2'(1525)$		$< 2.2 \times 10^{-4}$	CL=90%	1003	DESIG=29
$\eta \phi(2170) \rightarrow \eta K^*(892)^0 \overline{K}^*(892)^0$		$< 2.52 \times 10^{-4}$	CL=90%	–	DESIG=253
$\Sigma(1385)^0 \overline{\Lambda} +$ c.c.		$< 8.2 \times 10^{-6}$	CL=90%	912	DESIG=111
$\Delta(1232)^+ \overline{p}$		$< 1 \times 10^{-4}$	CL=90%	1100	DESIG=112
$\Lambda(1520) \overline{\Lambda} +$ c.c. $\rightarrow \gamma \Lambda \overline{\Lambda}$		$< 4.1 \times 10^{-6}$	CL=90%	–	DESIG=260
$\Theta(1540) \overline{\Theta}(1540) \rightarrow K_S^0 p K^- \overline{n} +$ c.c.		$< 1.1 \times 10^{-5}$	CL=90%	–	DESIG=205
$\Theta(1540) K^- \overline{n} \rightarrow K_S^0 p K^- \overline{n}$		$< 2.1 \times 10^{-5}$	CL=90%	–	DESIG=206
$\Theta(1540) K_S^0 \overline{p} \rightarrow K_S^0 \overline{p} K^+ n$		$< 1.6 \times 10^{-5}$	CL=90%	–	DESIG=207
$\overline{\Theta}(1540) K^+ n \rightarrow K_S^0 \overline{p} K^+ n$		$< 5.6 \times 10^{-5}$	CL=90%	–	DESIG=208
$\overline{\Theta}(1540) K_S^0 p \rightarrow K_S^0 p K^- \overline{n}$		$< 1.1 \times 10^{-5}$	CL=90%	–	DESIG=209
$\Sigma^0 \overline{\Lambda}$		$< 9 \times 10^{-5}$	CL=90%	1032	DESIG=110

Decays into stable hadrons

NODE=M070;CLUMP=B

$2(\pi^+ \pi^-) \pi^0$		(4.1 ± 0.5) %	S=2.4	1496	DESIG=9
$3(\pi^+ \pi^-) \pi^0$		(2.9 ± 0.6) %		1433	DESIG=11
$\pi^+ \pi^- \pi^0$		(2.11 ± 0.07) %	S=1.5	1533	DESIG=7
$\pi^+ \pi^- \pi^0 K^+ K^-$		(1.79 ± 0.29) %	S=2.2	1368	DESIG=18
$4(\pi^+ \pi^-) \pi^0$		$(9.0 \pm 3.0) \times 10^{-3}$		1345	DESIG=12
$\pi^+ \pi^- K^+ K^-$		$(6.6 \pm 0.5) \times 10^{-3}$		1407	DESIG=16
$\pi^+ \pi^- K^+ K^- \eta$		$(1.84 \pm 0.28) \times 10^{-3}$		1221	DESIG=238
$\pi^0 \pi^0 K^+ K^-$		$(2.45 \pm 0.31) \times 10^{-3}$		1410	DESIG=234
$K \overline{K} \pi$		$(6.1 \pm 1.0) \times 10^{-3}$		1442	DESIG=15
$2(\pi^+ \pi^-)$		$(3.57 \pm 0.30) \times 10^{-3}$		1517	DESIG=8
$3(\pi^+ \pi^-)$		$(4.3 \pm 0.4) \times 10^{-3}$		1466	DESIG=10
$2(\pi^+ \pi^- \pi^0)$		(1.62 ± 0.21) %		1468	DESIG=210
$2(\pi^+ \pi^-) \eta$		$(2.29 \pm 0.24) \times 10^{-3}$		1446	DESIG=201
$3(\pi^+ \pi^-) \eta$		$(7.2 \pm 1.5) \times 10^{-4}$		1379	DESIG=202
$p \overline{p}$		$(2.120 \pm 0.029) \times 10^{-3}$		1232	DESIG=50
$p \overline{p} \pi^0$		$(1.19 \pm 0.08) \times 10^{-3}$	S=1.1	1176	DESIG=52
$p \overline{p} \pi^+ \pi^-$		$(6.0 \pm 0.5) \times 10^{-3}$	S=1.3	1107	DESIG=54
$p \overline{p} \pi^+ \pi^- \pi^0$	[c]	$(2.3 \pm 0.9) \times 10^{-3}$	S=1.9	1033	DESIG=55
$p \overline{p} \eta$		$(2.00 \pm 0.12) \times 10^{-3}$		948	DESIG=56
$p \overline{p} \rho$		$< 3.1 \times 10^{-4}$	CL=90%	774	DESIG=57
$p \overline{p} \omega$		$(1.10 \pm 0.15) \times 10^{-3}$	S=1.3	768	DESIG=58
$p \overline{p} \eta'(958)$		$(2.1 \pm 0.4) \times 10^{-4}$		596	DESIG=59

$p\overline{p}\phi$		$(4.5 \pm 1.5) \times 10^{-5}$		527	DESIG=127
$n\overline{n}$		$(2.09 \pm 0.16) \times 10^{-3}$		1231	DESIG=64
$n\overline{n}\pi^+\pi^-$		$(4 \pm 4) \times 10^{-3}$		1106	DESIG=65
$\Sigma^+\overline{\Sigma}^-$		$(1.50 \pm 0.24) \times 10^{-3}$		992	DESIG=247
$\Sigma^0\overline{\Sigma}^0$		$(1.29 \pm 0.09) \times 10^{-3}$		988	DESIG=63
$2(\pi^+\pi^-)K^+K^-$		$(4.7 \pm 0.7) \times 10^{-3}$	S=1.3	1320	DESIG=17
$p\overline{n}\pi^-$		$(2.12 \pm 0.09) \times 10^{-3}$		1174	DESIG=53
$nN(1440)$		seen		978	DESIG=215;OUR EST;→ UNCHECKED ←
$nN(1520)$		seen		924	DESIG=216;OUR EST;→ UNCHECKED ←
$nN(1535)$		seen		914	DESIG=217;OUR EST;→ UNCHECKED ←
$\Xi^-\overline{\Xi}^+$		$(8.6 \pm 1.1) \times 10^{-4}$	S=1.2	807	DESIG=62
$\Lambda\overline{\Lambda}$		$(1.61 \pm 0.15) \times 10^{-3}$	S=1.9	1074	DESIG=60
$\Lambda\overline{\Sigma}^-\pi^+$ (or c.c.)	[b]	$(8.3 \pm 0.7) \times 10^{-4}$	S=1.2	950	DESIG=71
$pK^-\overline{\Lambda}$		$(8.9 \pm 1.6) \times 10^{-4}$		876	DESIG=72
$2(K^+K^-)$		$(7.6 \pm 0.9) \times 10^{-4}$		1131	DESIG=19
$pK^-\overline{\Sigma}^0$		$(2.9 \pm 0.8) \times 10^{-4}$		819	DESIG=73
K^+K^-		$(2.70 \pm 0.17) \times 10^{-4}$		1468	DESIG=13
$K^0_S K^0_L$		$(2.1 \pm 0.4) \times 10^{-4}$	S=3.2	1466	DESIG=75
$\Lambda\overline{\Lambda}\pi^+\pi^-$		$(4.3 \pm 1.0) \times 10^{-3}$		903	DESIG=261
$\Lambda\overline{\Lambda}\eta$		$(1.62 \pm 0.17) \times 10^{-4}$		672	DESIG=228
$\Lambda\overline{\Lambda}\pi^0$		$(3.8 \pm 0.4) \times 10^{-5}$		998	DESIG=109
$\overline{\Lambda}nK^0_S$ + c.c.		$(6.5 \pm 1.1) \times 10^{-4}$		872	DESIG=225
$\pi^+\pi^-$		$(1.47 \pm 0.14) \times 10^{-4}$		1542	DESIG=6
$\Lambda\overline{\Sigma}$ + c.c.		$(2.83 \pm 0.23) \times 10^{-3}$		1034	DESIG=61
$K^0_S K^0_S$		$< 1 \times 10^{-6}$	CL=95%	1466	DESIG=14
Radiative decays					NODE=M070;CLUMP=C
3γ		$(1.16 \pm 0.22) \times 10^{-5}$		1548	DESIG=81
4γ		$< 9 \times 10^{-6}$	CL=90%	1548	DESIG=244
5γ		$< 1.5 \times 10^{-5}$	CL=90%	1548	DESIG=245
$\gamma\eta_c(1S)$		(1.7 ± 0.4) %	S=1.6	111	DESIG=85
$\gamma\eta_c(1S) \rightarrow 3\gamma$		$(3.8 {}^{+1.3}_{-1.0}) \times 10^{-6}$	S=1.1	–	DESIG=246
$\gamma\pi^+\pi^-2\pi^0$		$(8.3 \pm 3.1) \times 10^{-3}$		1518	DESIG=99
$\gamma\eta\pi\pi$		$(6.1 \pm 1.0) \times 10^{-3}$		1487	DESIG=96
$\gamma\eta_2(1870) \rightarrow \gamma\eta\pi^+\pi^-$		$(6.2 \pm 2.4) \times 10^{-4}$		–	DESIG=142
$\gamma\eta(1405/1475) \rightarrow \gamma K\overline{K}\pi$	[d]	$(2.8 \pm 0.6) \times 10^{-3}$	S=1.6	1223	DESIG=89
$\gamma\eta(1405/1475) \rightarrow \gamma\gamma\rho^0$		$(7.8 \pm 2.0) \times 10^{-5}$	S=1.8	1223	DESIG=171
$\gamma\eta(1405/1475) \rightarrow \gamma\eta\pi^+\pi^-$		$(3.0 \pm 0.5) \times 10^{-4}$		–	DESIG=170
$\gamma\eta(1405/1475) \rightarrow \gamma\gamma\phi$		$< 8.2 \times 10^{-5}$	CL=95%	–	DESIG=212
$\gamma\rho\rho$		$(4.5 \pm 0.8) \times 10^{-3}$		1340	DESIG=94
$\gamma\rho\omega$		$< 5.4 \times 10^{-4}$	CL=90%	1338	DESIG=226
$\gamma\rho\phi$		$< 8.8 \times 10^{-5}$	CL=90%	1258	DESIG=227
$\gamma\eta'(958)$		$(5.15 \pm 0.16) \times 10^{-3}$	S=1.2	1400	DESIG=84
$\gamma 2\pi^+2\pi^-$		$(2.8 \pm 0.5) \times 10^{-3}$	S=1.9	1517	DESIG=95
$\gamma f_2(1270) f_2(1270)$		$(9.5 \pm 1.7) \times 10^{-4}$		879	DESIG=203
$\gamma f_2(1270) f_2(1270)$ (non resonant)		$(8.2 \pm 1.9) \times 10^{-4}$		–	DESIG=204
$\gamma K^+K^-\pi^+\pi^-$		$(2.1 \pm 0.6) \times 10^{-3}$		1407	DESIG=143
$\gamma f_4(2050)$		$(2.7 \pm 0.7) \times 10^{-3}$		891	DESIG=100
$\gamma\omega\omega$		$(1.61 \pm 0.33) \times 10^{-3}$		1336	DESIG=97
$\gamma\eta(1405/1475) \rightarrow \gamma\rho^0\rho^0$		$(1.7 \pm 0.4) \times 10^{-3}$	S=1.3	1223	DESIG=124
$\gamma f_2(1270)$		$(1.43 \pm 0.11) \times 10^{-3}$		1286	DESIG=86
$\gamma f_0(1710) \rightarrow \gamma K\overline{K}$		$(8.5 {}^{+1.2}_{-0.9}) \times 10^{-4}$	S=1.2	1075	DESIG=91
$\gamma f_0(1710) \rightarrow \gamma\pi\pi$		$(4.0 \pm 1.0) \times 10^{-4}$		–	DESIG=135
$\gamma f_0(1710) \rightarrow \gamma\omega\omega$		$(3.1 \pm 1.0) \times 10^{-4}$		–	DESIG=221
$\gamma\eta$		$(1.104 \pm 0.034) \times 10^{-3}$		1500	DESIG=83

$\gamma f_1(1420) \to \gamma K\overline{K}\pi$		$(7.9 \pm 1.3) \times 10^{-4}$		1220	DESIG=175
$\gamma f_1(1285)$		$(6.1 \pm 0.8) \times 10^{-4}$		1283	DESIG=88
$\gamma f_1(1510) \to \gamma\eta\pi^+\pi^-$		$(4.5 \pm 1.2) \times 10^{-4}$		–	DESIG=141
$\gamma f'_2(1525)$		$(4.5 {}^{+0.7}_{-0.4}) \times 10^{-4}$		1173	DESIG=87
$\gamma f_2(1640) \to \gamma\omega\omega$		$(2.8 \pm 1.8) \times 10^{-4}$		–	DESIG=222
$\gamma f_2(1910) \to \gamma\omega\omega$		$(2.0 \pm 1.4) \times 10^{-4}$		–	DESIG=223
$\gamma f_0(1800) \to \gamma\omega\phi$		$(2.5 \pm 0.6) \times 10^{-4}$		–	DESIG=262
$\gamma f_2(1950) \to \gamma K^*(892)\overline{K}^*(892)$		$(7.0 \pm 2.2) \times 10^{-4}$		–	DESIG=144
$\gamma K^*(892)\overline{K}^*(892)$		$(4.0 \pm 1.3) \times 10^{-3}$		1266	DESIG=145
$\gamma\phi\phi$		$(4.0 \pm 1.2) \times 10^{-4}$	S=2.1	1166	DESIG=98
$\gamma p\overline{p}$		$(3.8 \pm 1.0) \times 10^{-4}$		1232	DESIG=90
$\gamma\eta(2225)$		$(3.3 \pm 0.5) \times 10^{-4}$		749	DESIG=126
$\gamma\eta(1760) \to \gamma\rho^0\rho^0$		$(1.3 \pm 0.9) \times 10^{-4}$		1048	DESIG=125
$\gamma\eta(1760) \to \gamma\omega\omega$		$(1.98 \pm 0.33) \times 10^{-3}$		–	DESIG=224
$\gamma X(1835) \to \gamma\pi^+\pi^-\eta'$		$(2.6 \pm 0.4) \times 10^{-4}$		1006	DESIG=213
$\gamma X(1835) \to \gamma p\overline{p}$		$(7.7 {}^{+1.5}_{-0.9}) \times 10^{-5}$		–	DESIG=254
$\gamma(K\overline{K}\pi)$ $[J^{PC} = 0^{-+}]$		$(7 \pm 4) \times 10^{-4}$	S=2.1	1442	DESIG=176
$\gamma\pi^0$		$(3.49 {}^{+0.33}_{-0.30}) \times 10^{-5}$		1546	DESIG=82
$\gamma p\overline{p}\pi^+\pi^-$		$< 7.9 \times 10^{-4}$	CL=90%	1107	DESIG=93
$\gamma\Lambda\overline{\Lambda}$		$< 1.3 \times 10^{-4}$	CL=90%	1074	DESIG=200
$\gamma f_J(2220)$		$> 2.50 \times 10^{-3}$	CL=99.9%	745	DESIG=92
$\gamma f_J(2220) \to \gamma\pi\pi$		$(8 \pm 4) \times 10^{-5}$		–	DESIG=136
$\gamma f_J(2220) \to \gamma K\overline{K}$		$< 3.6 \times 10^{-5}$		–	DESIG=137
$\gamma f_J(2220) \to \gamma p\overline{p}$		$(1.5 \pm 0.8) \times 10^{-5}$		–	DESIG=138
$\gamma f_0(1500)$		$(1.01 \pm 0.32) \times 10^{-4}$		1183	DESIG=172
$\gamma A \to \gamma$invisible	[e]	$< 6.3 \times 10^{-6}$	CL=90%	–	DESIG=251
$\gamma A^0 \to \gamma\mu^+\mu^-$	[f]	$< 2.1 \times 10^{-5}$	CL=90%	–	DESIG=259
Weak decays					NODE=M070;CLUMP=E
$D^- e^+\nu_e +$ c.c.		$< 1.2 \times 10^{-5}$	CL=90%	984	DESIG=218
$\overline{D}^0 e^+ e^- +$ c.c.		$< 1.1 \times 10^{-5}$	CL=90%	987	DESIG=219
$D_s^- e^+\nu_e +$ c.c.		$< 3.6 \times 10^{-5}$	CL=90%	923	DESIG=220
$D^-\pi^+ +$ c.c.		$< 7.5 \times 10^{-5}$	CL=90%	977	DESIG=241
$\overline{D}^0\overline{K}^0 +$ c.c.		$< 1.7 \times 10^{-4}$	CL=90%	898	DESIG=242
$D_s^-\pi^+ +$ c.c.		$< 1.3 \times 10^{-4}$	CL=90%	915	DESIG=243
Charge conjugation (C), Parity (P), Lepton Family number (LF) violating modes					NODE=M070;CLUMP=D
$\gamma\gamma$	C	$< 5 \times 10^{-6}$	CL=90%	1548	DESIG=80
$e^\pm\mu^\mp$	LF	$< 1.1 \times 10^{-6}$	CL=90%	1547	DESIG=177
$e^\pm\tau^\mp$	LF	$< 8.3 \times 10^{-6}$	CL=90%	1039	DESIG=178
$\mu^\pm\tau^\mp$	LF	$< 2.0 \times 10^{-6}$	CL=90%	1035	DESIG=179
Other decays					NODE=M070;CLUMP=F
invisible		$< 7 \times 10^{-4}$	CL=90%	–	DESIG=240

$\chi_{c0}(1P)$

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

NODE=M056

Mass $m = 3414.75 \pm 0.31$ MeV NODE=M056M;DTYPE=M

Full width $\Gamma = 10.3 \pm 0.6$ MeV NODE=M056W;DTYPE=G

$\chi_{c0}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
Hadronic decays				NODE=M056215;NODE=M056;CLUMP=A
$2(\pi^+\pi^-)$	(2.25 ± 0.19) %		1679	DESIG=3
$\rho^0\pi^+\pi^-$	$(8.8\ \pm2.8\ )\times10^{-3}$		1607	DESIG=9
$f_0(980)\,f_0(980)$	$(6.6\ \pm2.1\ )\times10^{-4}$		1391	DESIG=20
$\pi^+\pi^-\pi^0\pi^0$	$(3.3\ \pm0.4\ )$ %		1680	DESIG=61
$\rho^+\pi^-\pi^0+$ c.c.	$(2.8\ \pm0.4\ )$ %		1607	DESIG=62
$4\pi^0$	$(3.3\ \pm0.4\ )\times10^{-3}$		1681	DESIG=70
$\pi^+\pi^-K^+K^-$	(1.77 ± 0.15) %		1580	DESIG=5
$K_0^*(1430)^0\overline{K}_0^*(1430)^0\to\pi^+\pi^-K^+K^-$	$(9.8\ ^{+4.0}_{-2.8}\ )\times10^{-4}$		–	DESIG=31
$K_0^*(1430)^0\overline{K}_2^*(1430)^0+$ c.c. $\to\pi^+\pi^-K^+K^-$	$(8.0\ ^{+2.0}_{-2.4}\ )\times10^{-4}$		–	DESIG=32
$K_1(1270)^+K^-+$ c.c. $\to\pi^+\pi^-K^+K^-$	$(6.2\ \pm1.9\ )\times10^{-3}$		–	DESIG=33
$K_1(1400)^+K^-+$ c.c. $\to\pi^+\pi^-K^+K^-$	$<2.7\ \times10^{-3}$	CL=90%	–	DESIG=34
$f_0(980)\,f_0(980)$	$(1.6\ ^{+1.0}_{-0.9}\ )\times10^{-4}$		1391	DESIG=23
$f_0(980)\,f_0(2200)$	$(7.9\ ^{+2.0}_{-2.5}\ )\times10^{-4}$		584	DESIG=24
$f_0(1370)\,f_0(1370)$	$<2.7\ \times10^{-4}$	CL=90%	1019	DESIG=25
$f_0(1370)\,f_0(1500)$	$<1.7\ \times10^{-4}$	CL=90%	920	DESIG=26
$f_0(1370)\,f_0(1710)$	$(6.7\ ^{+3.5}_{-2.3}\ )\times10^{-4}$		723	DESIG=27
$f_0(1500)\,f_0(1370)$	$<1.3\ \times10^{-4}$	CL=90%	920	DESIG=28
$f_0(1500)\,f_0(1500)$	$<5\ \times10^{-5}$	CL=90%	805	DESIG=29
$f_0(1500)\,f_0(1710)$	$<7\ \times10^{-5}$	CL=90%	559	DESIG=30
$K^+K^-\pi^+\pi^-\pi^0$	(1.12 ± 0.27) %		1545	DESIG=75
$K^+K^-\pi^0\pi^0$	$(5.5\ \pm0.9\ )\times10^{-3}$		1582	DESIG=63
$K^+\pi^-K^0\pi^0+$ c.c.	(2.47 ± 0.33) %		1581	DESIG=65
$\rho^+K^-K^0+$ c.c.	(1.20 ± 0.21) %		1458	DESIG=66
$K^*(892)^-K^+\pi^0\to K^+\pi^-K^0\pi^0+$ c.c.	$(4.6\ \pm1.2\ )\times10^{-3}$		–	DESIG=67
$K_S^0K_S^0\pi^+\pi^-$	$(5.7\ \pm1.1\ )\times10^{-3}$		1579	DESIG=41
$K^+K^-\eta\pi^0$	$(3.0\ \pm0.7\ )\times10^{-3}$		1468	DESIG=68
$3(\pi^+\pi^-)$	(1.20 ± 0.18) %		1633	DESIG=4
$K^+\overline{K}^*(892)^0\pi^-+$ c.c.	$(7.3\ \pm1.6\ )\times10^{-3}$		1523	DESIG=10
$K^*(892)^0\overline{K}^*(892)^0$	$(1.7\ \pm0.6\ )\times10^{-3}$		1456	DESIG=21
$\pi\pi$	$(8.5\ \pm0.4\ )\times10^{-3}$		1702	DESIG=18
$\pi^0\eta$	$<1.9\ \times10^{-4}$		1661	DESIG=35
$\pi^0\eta'$	$<1.2\ \times10^{-3}$		1570	DESIG=36
$\eta\eta$	$(3.01\pm0.20)\times10^{-3}$		1617	DESIG=13
$\eta\eta'$	$<2.3\ \times10^{-4}$	CL=90%	1521	DESIG=37
$\eta'\eta'$	$(1.99\pm0.22)\times10^{-3}$		1413	DESIG=46
$\omega\omega$	$(9.6\ \pm1.1\ )\times10^{-4}$		1517	DESIG=22
$\omega\phi$	$(1.17\pm0.22)\times10^{-4}$		1447	DESIG=76
K^+K^-	$(5.98\pm0.34)\times10^{-3}$		1634	DESIG=2
$K_S^0K_S^0$	$(3.10\pm0.18)\times10^{-3}$		1633	DESIG=15
$\pi^+\pi^-\eta$	$<2.0\ \times10^{-4}$	CL=90%	1651	DESIG=50
$\pi^+\pi^-\eta'$	$<4\ \times10^{-4}$	CL=90%	1560	DESIG=53
$\overline{K}^0K^+\pi^-+$ c.c.	$<9\ \times10^{-5}$	CL=90%	1610	DESIG=17
$K^+K^-\pi^0$	$<6\ \times10^{-5}$	CL=90%	1611	DESIG=47
$K^+K^-\eta$	$<2.2\ \times10^{-4}$	CL=90%	1512	DESIG=51
$K^+K^-K_S^0K_S^0$	$(1.4\ \pm0.5\ )\times10^{-3}$		1331	DESIG=42
$K^+K^-K^+K^-$	$(2.77\pm0.29)\times10^{-3}$		1333	DESIG=14
$K^+K^-\phi$	$(9.6\ \pm2.5\ )\times10^{-4}$		1381	DESIG=44
$\phi\phi$	$(7.9\ \pm0.8\ )\times10^{-4}$		1370	DESIG=16

$p\overline{p}$	$(2.13\pm0.12)\times10^{-4}$		1426	DESIG=11
$p\overline{p}\pi^0$	$(6.9\ \pm0.7\ )\times10^{-4}$	S=1.2	1379	DESIG=48
$p\overline{p}\eta$	$(3.5\ \pm0.4\ )\times10^{-4}$		1187	DESIG=52
$p\overline{p}\omega$	$(5.2\ \pm0.6\ )\times10^{-4}$		1043	DESIG=69
$p\overline{p}\phi$	$(6.0\ \pm1.4\ )\times10^{-5}$		876	DESIG=74
$p\overline{p}\pi^+\pi^-$	$(2.1\ \pm0.7\ )\times10^{-3}$	S=1.4	1320	DESIG=8
$p\overline{p}\pi^0\pi^0$	$(1.03\pm0.28)\times10^{-3}$		1324	DESIG=64
$p\overline{p}K^+K^-$ (non-resonant)	$(1.21\pm0.26)\times10^{-4}$		890	DESIG=71
$p\overline{p}K^0_SK^0_S$	$<8.8\times10^{-4}$	CL=90%	884	DESIG=40
$p\overline{n}\pi^-$	$(1.12\pm0.31)\times10^{-3}$		1376	DESIG=43
$\Lambda\overline{\Lambda}$	$(3.3\ \pm0.4\ )\times10^{-4}$		1292	DESIG=19
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$<4.0\times10^{-3}$	CL=90%	1153	DESIG=38
$K^+\overline{p}\Lambda+$ c.c.	$(1.24\pm0.12)\times10^{-3}$	S=1.3	1132	DESIG=49
$K^+p\Lambda(1520)+$ c.c.	$(2.9\ \pm0.7\ )\times10^{-4}$		858	DESIG=72
$\Lambda(1520)\overline{\Lambda}(1520)$	$(3.1\ \pm1.2\ )\times10^{-4}$		779	DESIG=73
$\Sigma^0\overline{\Sigma}^0$	$(4.1\ \pm0.7\ )\times10^{-4}$		1222	DESIG=58
$\Sigma^+\overline{\Sigma}^-$	$(3.0\ \pm0.7\ )\times10^{-4}$		1225	DESIG=59
$\Xi^0\overline{\Xi}^0$	$(3.1\ \pm0.8\ )\times10^{-4}$		1089	DESIG=60
$\Xi^-\overline{\Xi}^+$	$(4.8\ \pm0.7\ )\times10^{-4}$		1081	DESIG=39
Radiative decays				NODE=M056;CLUMP=B
$\gamma J/\psi(1S)$	(1.30 ± 0.07) %		303	DESIG=6
$\gamma\rho^0$	$<9\times10^{-6}$	CL=90%	1619	DESIG=55
$\gamma\omega$	$<8\times10^{-6}$	CL=90%	1618	DESIG=56
$\gamma\phi$	$<6\times10^{-6}$	CL=90%	1555	DESIG=57
$\gamma\gamma$	$(2.25\pm0.17)\times10^{-4}$		1707	DESIG=7

$\chi_{c1}(1P)$

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

NODE=M055

Mass $m = 3510.66 \pm 0.07$ MeV (S = 1.5) NODE=M055M;DTYPE=M

Full width $\Gamma = 0.86 \pm 0.05$ MeV NODE=M055W;DTYPE=G

$\chi_{c1}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
Hadronic decays				NODE=M055215;NODE=M055;CLUMP=A
$3(\pi^+\pi^-)$	$(5.8\ \pm1.4\ )\times10^{-3}$	S=1.2	1683	DESIG=6
$2(\pi^+\pi^-)$	$(7.6\ \pm2.6\ )\times10^{-3}$		1728	DESIG=5
$\pi^+\pi^-\pi^0\pi^0$	(1.25 ± 0.17) %		1729	DESIG=51
$\rho^+\pi^-\pi^0+$ c.c.	(1.53 ± 0.26) %		1658	DESIG=52
$\rho^0\pi^+\pi^-$	$(3.9\ \pm3.5\ )\times10^{-3}$		1657	DESIG=9
$4\pi^0$	$(5.7\ \pm0.8\ )\times10^{-4}$		1729	DESIG=60
$\pi^+\pi^-K^+K^-$	$(4.5\ \pm1.0\ )\times10^{-3}$		1632	DESIG=7
$K^+K^-\pi^0\pi^0$	$(1.17\pm0.29)\times10^{-3}$		1634	DESIG=53
$K^+\pi^-K^0\pi^0+$ c.c.	$(9.0\ \pm1.4\ )\times10^{-3}$		1632	DESIG=55
$\rho^+K^-K^0+$ c.c.	$(5.3\ \pm1.3\ )\times10^{-3}$		1514	DESIG=56
$K^*(892)^0K^0\pi^0\to K^+\pi^-K^0\pi^0+$ c.c.	$(2.4\ \pm0.7\ )\times10^{-3}$		–	DESIG=57
$K^+K^-\eta\pi^0$	$(1.2\ \pm0.4\ )\times10^{-3}$		1523	DESIG=58
$\pi^+\pi^-K^0_SK^0_S$	$(7.2\ \pm3.1\ )\times10^{-4}$		1630	DESIG=28
$K^+K^-\eta$	$(3.3\ \pm1.0\ )\times10^{-4}$		1566	DESIG=42
$K^0K^+\pi^-+$ c.c.	$(7.3\ \pm0.6\ )\times10^{-3}$		1661	DESIG=17
$K^*(892)^0\overline{K}^0+$ c.c.	$(1.0\ \pm0.4\ )\times10^{-3}$		1602	DESIG=32
$K^*(892)^+K^-+$ c.c.	$(1.5\ \pm0.7\ )\times10^{-3}$		1602	DESIG=33
$K^*_J(1430)^0\overline{K}^0+$ c.c. $\to K^0_SK^+\pi^-+$ c.c.	$<8\times10^{-4}$	CL=90%	–	DESIG=34
$K^*_J(1430)^+K^-+$ c.c. $\to K^0_SK^+\pi^-+$ c.c.	$<2.3\times10^{-3}$	CL=90%	–	DESIG=35
$K^+K^-\pi^0$	$(1.91\pm0.26)\times10^{-3}$		1662	DESIG=38
$\eta\pi^+\pi^-$	$(5.0\ \pm0.5\ )\times10^{-3}$		1701	DESIG=31
$a_0(980)^+\pi^-+$ c.c. $\to\ \eta\pi^+\pi^-$	$(1.9\ \pm0.7\ )\times10^{-3}$		–	DESIG=36

$f_2(1270)\eta$	$(2.8 \pm 0.8) \times 10^{-3}$		1468	DESIG=37
$\pi^+\pi^-\eta'$	$(2.3 \pm 0.5) \times 10^{-3}$		1612	DESIG=44
$\pi^0 f_0(980) \rightarrow \pi^0\pi^+\pi^-$	$< 6 \times 10^{-6}$	CL=90%	–	DESIG=61
$K^+\overline{K}^*(892)^0\pi^- +$ c.c.	$(3.2 \pm 2.1) \times 10^{-3}$		1577	DESIG=10
$K^*(892)^0\overline{K}^*(892)^0$	$(1.5 \pm 0.4) \times 10^{-3}$		1512	DESIG=21
$K^+K^-K^0_SK^0_S$	$< 5 \times 10^{-4}$	CL=90%	1390	DESIG=29
$K^+K^-K^+K^-$	$(5.6 \pm 1.2) \times 10^{-4}$		1393	DESIG=14
$K^+K^-\phi$	$(4.3 \pm 1.6) \times 10^{-4}$		1440	DESIG=30
$\omega\omega$	$(6.0 \pm 0.7) \times 10^{-4}$		1571	DESIG=66
$\omega\phi$	$(2.2 \pm 0.6) \times 10^{-5}$		1503	DESIG=67
$\phi\phi$	$(4.4 \pm 0.6) \times 10^{-4}$		1429	DESIG=68
$p\overline{p}$	$(7.3 \pm 0.4) \times 10^{-5}$		1484	DESIG=11
$p\overline{p}\pi^0$	$(1.63 \pm 0.20) \times 10^{-4}$		1438	DESIG=39
$p\overline{p}\eta$	$(1.53 \pm 0.26) \times 10^{-4}$		1254	DESIG=43
$p\overline{p}\omega$	$(2.23 \pm 0.33) \times 10^{-4}$		1117	DESIG=59
$p\overline{p}\phi$	$< 1.8 \times 10^{-5}$	CL=90%	962	DESIG=65
$p\overline{p}\pi^+\pi^-$	$(5.0 \pm 1.9) \times 10^{-4}$		1381	DESIG=8
$p\overline{p}K^+K^-$ (non-resonant)	$(1.34 \pm 0.24) \times 10^{-4}$		974	DESIG=62
$p\overline{p}K^0_SK^0_S$	$< 4.5 \times 10^{-4}$	CL=90%	968	DESIG=25
$\Lambda\overline{\Lambda}$	$(1.18 \pm 0.19) \times 10^{-4}$		1355	DESIG=19
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$< 1.5 \times 10^{-3}$	CL=90%	1223	DESIG=24
$K^+\overline{p}\Lambda$	$(4.3 \pm 0.4) \times 10^{-4}$	S=1.1	1203	DESIG=40
$K^+p\Lambda(1520) +$ c.c.	$(1.8 \pm 0.5) \times 10^{-4}$		950	DESIG=63
$\Lambda(1520)\overline{\Lambda}(1520)$	$< 1.0 \times 10^{-4}$	CL=90%	879	DESIG=64
$\Sigma^0\overline{\Sigma}^0$	$< 4 \times 10^{-5}$	CL=90%	1288	DESIG=48
$\Sigma^+\overline{\Sigma}^-$	$< 6 \times 10^{-5}$	CL=90%	1291	DESIG=49
$\Xi^0\overline{\Xi}^0$	$< 6 \times 10^{-5}$	CL=90%	1163	DESIG=50
$\Xi^-\overline{\Xi}^+$	$(8.4 \pm 2.3) \times 10^{-5}$		1155	DESIG=26
$\pi^+\pi^- + K^+K^-$	$< 2.1 \times 10^{-3}$		–	DESIG=23
$K^0_SK^0_S$	$< 6 \times 10^{-5}$	CL=90%	1683	DESIG=27
Radiative decays				NODE=M055;CLUMP=B
$\gamma J/\psi(1S)$	(34.8 ± 1.5) %		389	DESIG=1
$\gamma\rho^0$	$(2.27 \pm 0.19) \times 10^{-4}$		1670	DESIG=45
$\gamma\omega$	$(7.1 \pm 0.9) \times 10^{-5}$		1668	DESIG=46
$\gamma\phi$	$(2.6 \pm 0.6) \times 10^{-5}$		1607	DESIG=47

$h_c(1P)$

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

NODE=M144

Mass $m = 3525.38 \pm 0.11$ MeV NODE=M144M;DTYPE=M

Full width $\Gamma = 0.7 \pm 0.4$ MeV NODE=M144W;DTYPE=G

$h_c(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$J/\psi(1S)\pi\pi$	not seen	312	NODE=M144215;DESIG=2;OUR EST; → UNCHECKED ←
$\eta_c(1S)\gamma$	(51 ± 6) %	500	DESIG=4
$\pi^+\pi^-\pi^0$	$< 2.2 \times 10^{-3}$	1749	DESIG=5
$2\pi^+2\pi^-\pi^0$	$(2.2^{+0.8}_{-0.7})$ %	1716	DESIG=6
$3\pi^+3\pi^-\pi^0$	< 2.9 %	1661	DESIG=7

$\chi_{c2}(1P)$

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

NODE=M057

Mass $m = 3556.20 \pm 0.09$ MeV NODE=M057M;DTYPE=M

Full width $\Gamma = 1.97 \pm 0.11$ MeV NODE=M057W;DTYPE=G

$\chi_{c2}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
Hadronic decays				NODE=M057215;NODE=M057;CLUMP=A
$2(\pi^+\pi^-)$	(1.10 ± 0.11) %		1751	DESIG=3
$\pi^+\pi^-\pi^0\pi^0$	(1.99 ± 0.26) %		1752	DESIG=50
$\rho^+\pi^-\pi^0$ + c.c.	(2.4 ± 0.4) %		1682	DESIG=51
$4\pi^0$	$(1.21\pm0.17)\times10^{-3}$		1752	DESIG=62
$K^+K^-\pi^0\pi^0$	$(2.2\pm0.4)\times10^{-3}$		1658	DESIG=52
$K^+\pi^-K^0\pi^0$ + c.c.	(1.50 ± 0.22) %		1657	DESIG=54
$\rho^+K^-K^0$ + c.c.	$(4.5\pm1.4)\times10^{-3}$		1540	DESIG=55
$K^*(892)^0K^+\pi^- \to K^+\pi^-K^0\pi^0$ + c.c.	$(3.2\pm0.9)\times10^{-3}$		–	DESIG=60
$K^*(892)^0K^0\pi^0 \to K^+\pi^-K^0\pi^0$ + c.c.	$(4.2\pm0.9)\times10^{-3}$		–	DESIG=56
$K^*(892)^-K^+\pi^0 \to K^+\pi^-K^0\pi^0$ + c.c.	$(4.0\pm0.9)\times10^{-3}$		–	DESIG=57
$K^*(892)^+K^0\pi^- \to K^+\pi^-K^0\pi^0$ + c.c.	$(3.2\pm0.9)\times10^{-3}$		–	DESIG=58
$K^+K^-\eta\pi^0$	$(1.4\pm0.5)\times10^{-3}$		1549	DESIG=59
$K^+K^-\pi^+\pi^-$	$(9.1\pm1.1)\times10^{-3}$		1656	DESIG=5
$K^+K^-\pi^+\pi^-\pi^0$	(1.3 ± 0.4) %		1623	DESIG=67
$K^+\overline{K}^*(892)^0\pi^-$ + c.c.	$(2.3\pm1.2)\times10^{-3}$		1602	DESIG=10
$K^*(892)^0\overline{K}^*(892)^0$	$(2.5\pm0.5)\times10^{-3}$		1538	DESIG=21
$3(\pi^+\pi^-)$	$(8.6\pm1.8)\times10^{-3}$		1707	DESIG=4
$\phi\phi$	$(1.16\pm0.10)\times10^{-3}$		1457	DESIG=16
$\omega\omega$	$(9.2\pm1.1)\times10^{-4}$		1597	DESIG=25
$\pi\pi$	$(2.42\pm0.13)\times10^{-3}$		1773	DESIG=22
$\rho^0\pi^+\pi^-$	$(4.0\pm1.7)\times10^{-3}$		1682	DESIG=9
$\pi^+\pi^-\eta$	$(5.2\pm1.4)\times10^{-4}$		1724	DESIG=39
$\pi^+\pi^-\eta'$	$(5.4\pm2.0)\times10^{-4}$		1636	DESIG=42
$\eta\eta$	$(5.9\pm0.5)\times10^{-4}$		1692	DESIG=14
K^+K^-	$(1.09\pm0.08)\times10^{-3}$		1708	DESIG=2
$K^0_SK^0_S$	$(5.8\pm0.5)\times10^{-4}$		1707	DESIG=15
$\overline{K}^0K^+\pi^-$ + c.c.	$(1.39\pm0.20)\times10^{-3}$		1685	DESIG=17
$K^+K^-\pi^0$	$(3.3\pm0.8)\times10^{-4}$		1686	DESIG=36
$K^+K^-\eta$	$<3.5\times10^{-4}$	90%	1592	DESIG=40
$\eta\eta'$	$<6\times10^{-5}$	90%	1600	DESIG=34
$\eta'\eta'$	$<1.1\times10^{-4}$	90%	1498	DESIG=35
$\pi^+\pi^-K^0_SK^0_S$	$(2.4\pm0.6)\times10^{-3}$		1655	DESIG=29
$K^+K^-K^0_SK^0_S$	$<4\times10^{-4}$	90%	1418	DESIG=30
$K^+K^-K^+K^-$	$(1.78\pm0.22)\times10^{-3}$		1421	DESIG=24
$K^+K^-\phi$	$(1.54\pm0.32)\times10^{-3}$		1468	DESIG=32
$p\overline{p}$	$(7.1\pm0.4)\times10^{-5}$		1510	DESIG=11
$p\overline{p}\pi^0$	$(5.1\pm0.5)\times10^{-4}$		1465	DESIG=37
$p\overline{p}\eta$	$(1.89\pm0.28)\times10^{-4}$		1285	DESIG=41
$p\overline{p}\omega$	$(3.9\pm0.5)\times10^{-4}$		1152	DESIG=61
$p\overline{p}\phi$	$(3.0\pm1.0)\times10^{-5}$		1002	DESIG=66
$p\overline{p}\pi^+\pi^-$	$(1.32\pm0.34)\times10^{-3}$		1410	DESIG=8
$p\overline{p}\pi^0\pi^0$	$(8.5\pm2.6)\times10^{-4}$		1414	DESIG=53
$p\overline{p}K^+K^-$ (non-resonant)	$(2.08\pm0.35)\times10^{-4}$		1013	DESIG=63
$p\overline{p}K^0_SK^0_S$	$<7.9\times10^{-4}$	90%	1007	DESIG=28
$p\overline{n}\pi^-$	$(1.1\pm0.4)\times10^{-3}$		1463	DESIG=31
$\Lambda\overline{\Lambda}$	$(1.86\pm0.27)\times10^{-4}$		1385	DESIG=19
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$<3.5\times10^{-3}$	90%	1255	DESIG=27
$K^+\overline{p}\Lambda$ + c.c.	$(8.4\pm0.6)\times10^{-4}$		1236	DESIG=38
$K^+p\Lambda(1520)$ + c.c.	$(3.1\pm0.7)\times10^{-4}$		992	DESIG=64
$\Lambda(1520)\overline{\Lambda}(1520)$	$(5.0\pm1.6)\times10^{-4}$		923	DESIG=65
$\Sigma^0\overline{\Sigma}^0$	$<8\times10^{-5}$	90%	1319	DESIG=47
$\Sigma^+\overline{\Sigma}^-$	$<7\times10^{-5}$	90%	1322	DESIG=48
$\Xi^0\overline{\Xi}^0$	$<1.1\times10^{-4}$	90%	1197	DESIG=49
$\Xi^-\overline{\Xi}^+$	$(1.55\pm0.35)\times10^{-4}$		1189	DESIG=26
$J/\psi(1S)\pi^+\pi^-\pi^0$	<1.5 %	90%	185	DESIG=12
$\eta_c(1S)\pi^+\pi^-$	<2.3 %	90%	459	DESIG=69

Radiative decays

NODE=M057;CLUMP=B

$\gamma J/\psi(1S)$	(19.8 ±0.8) %			430	DESIG=6
$\gamma \rho^0$	< 2.1	$\times 10^{-5}$	90%	1694	DESIG=44
$\gamma \omega$	< 6	$\times 10^{-6}$	90%	1692	DESIG=45
$\gamma \phi$	< 8	$\times 10^{-6}$	90%	1632	DESIG=46
$\gamma \gamma$	(2.61±0.16)	$\times 10^{-4}$		1778	DESIG=7

$\eta_c(2S)$

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

NODE=M059

Quantum numbers are quark model predictions.

Mass $m = 3639.4 \pm 1.3$ MeV (S = 1.2)

NODE=M059M;DTYPE=M

Full width $\Gamma = 11.3^{+3.2}_{-2.9}$ MeV

NODE=M059W;DTYPE=G

$\eta_c(2S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
hadrons	not seen		–	NODE=M059215;DESIG=1
$K\overline{K}\pi$	(1.9±1.2) %		1730	DESIG=4
$2\pi^+2\pi^-$	not seen		1793	DESIG=5
$\rho^0\rho^0$	not seen		1646	DESIG=16
$3\pi^+3\pi^-$	not seen		1750	DESIG=8;OUR EVAL;→ UNCHECKED ←
$K^+K^-\pi^+\pi^-$	not seen		1701	DESIG=6
$K^{*0}\overline{K}^{*0}$	not seen		1586	DESIG=17
$K^+K^-\pi^+\pi^-\pi^0$	(1.4±1.0) %		1668	DESIG=9
$K^+K^-2\pi^+2\pi^-$	not seen		1628	DESIG=10;OUR EVAL;→ UNCHECKED ←
$K^0_S K^-2\pi^+\pi^-$ + c.c.	seen		1667	DESIG=11
$2K^+2K^-$	not seen		1471	DESIG=7
$\phi\phi$	not seen		1507	DESIG=18
$p\overline{p}$	< 2.9 $\times 10^{-4}$	90%	1559	DESIG=3
$\gamma\gamma$	(1.9±1.3) $\times 10^{-4}$		1820	DESIG=2
$\pi^+\pi^-\eta$	not seen		1767	DESIG=12;OUR EVAL;→ UNCHECKED ←
$\pi^+\pi^-\eta'$	not seen		1681	DESIG=13;OUR EVAL;→ UNCHECKED ←
$K^+K^-\eta$	not seen		1638	DESIG=14;OUR EVAL;→ UNCHECKED ←
$\pi^+\pi^-\eta_c(1S)$	< 25 %	90%	539	DESIG=15

$\psi(2S)$

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

NODE=M071

Mass $m = 3686.109^{+0.012}_{-0.014}$ MeV

NODE=M071M;DTYPE=M

Full width $\Gamma = 303 \pm 9$ keV

NODE=M071W;DTYPE=G

$\Gamma_{ee} = 2.37 \pm 0.04$ keV

NODE=M071W1;DTYPE=E

$\psi(2S)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
hadrons	(97.85 ± 0.13) %		–	NODE=M071220;DESIG=3
virtual $\gamma \rightarrow$ hadrons	(1.73 ± 0.14) %	S=1.5	–	DESIG=4
ggg	(10.6 ± 1.6) %		–	DESIG=255
γgg	(1.03 ± 0.29) %		–	DESIG=256
light hadrons	(15.4 ± 1.5) %		–	DESIG=226
e^+e^-	$(7.82 \pm 0.17) \times 10^{-3}$		1843	DESIG=1
$\mu^+\mu^-$	$(7.8 \pm 0.9) \times 10^{-3}$		1840	DESIG=2
$\tau^+\tau^-$	$(3.1 \pm 0.4) \times 10^{-3}$		490	DESIG=68
Decays into $J/\psi(1S)$ and anything				NODE=M071;CLUMP=A
$J/\psi(1S)$ anything	(60.3 ± 0.7) %		–	DESIG=11
$J/\psi(1S)$ neutrals	(24.9 ± 0.4) %		–	DESIG=12
$J/\psi(1S)\pi^+\pi^-$	(34.0 ± 0.4) %		477	DESIG=13
$J/\psi(1S)\pi^0\pi^0$	(17.93 ± 0.33) %		481	DESIG=14
$J/\psi(1S)\eta$	(3.33 ± 0.05) %		199	DESIG=15
$J/\psi(1S)\pi^0$	$(1.268 \pm 0.032) \times 10^{-3}$		528	DESIG=18
Hadronic decays				NODE=M071;CLUMP=B
$\pi^0 h_c(1P)$	$(8.6 \pm 1.3) \times 10^{-4}$		85	DESIG=254
$3(\pi^+\pi^-)\pi^0$	$(3.5 \pm 1.6) \times 10^{-3}$		1746	DESIG=37
$2(\pi^+\pi^-)\pi^0$	$(2.9 \pm 1.0) \times 10^{-3}$	S=4.6	1799	DESIG=25
$\rho a_2(1320)$	$(2.6 \pm 0.9) \times 10^{-4}$		1500	DESIG=65
$p\overline{p}$	$(2.75 \pm 0.12) \times 10^{-4}$		1586	DESIG=27
$\Delta^{++}\overline{\Delta}^{--}$	$(1.28 \pm 0.35) \times 10^{-4}$		1371	DESIG=70
$\Lambda\overline{\Lambda}\pi^0$	$< 2.9 \times 10^{-6}$	CL=90%	1412	DESIG=238
$\Lambda\overline{\Lambda}\eta$	$(2.5 \pm 0.4) \times 10^{-5}$		1197	DESIG=239
$\Lambda\overline{p}K^+$	$(1.00 \pm 0.14) \times 10^{-4}$		1327	DESIG=214
$\Lambda\overline{p}K^+\pi^+\pi^-$	$(1.8 \pm 0.4) \times 10^{-4}$		1167	DESIG=215
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$(2.8 \pm 0.6) \times 10^{-4}$		1346	DESIG=213
$\Lambda\overline{\Lambda}$	$(2.8 \pm 0.5) \times 10^{-4}$	S=2.6	1467	DESIG=28
$\Sigma^0\overline{p}K^+ +$ c.c.	$(1.67 \pm 0.18) \times 10^{-5}$		1291	DESIG=274
$\Sigma^+\overline{\Sigma}^-$	$(2.6 \pm 0.8) \times 10^{-4}$		1408	DESIG=223
$\Sigma^0\overline{\Sigma}^0$	$(2.2 \pm 0.4) \times 10^{-4}$	S=1.5	1405	DESIG=71
$\Sigma(1385)^+\overline{\Sigma}(1385)^-$	$(1.1 \pm 0.4) \times 10^{-4}$		1218	DESIG=72
$\Xi^-\overline{\Xi}^+$	$(1.8 \pm 0.6) \times 10^{-4}$	S=2.8	1284	DESIG=29
$\Xi^0\overline{\Xi}^0$	$(2.8 \pm 0.9) \times 10^{-4}$		1292	DESIG=224
$\Xi(1530)^0\overline{\Xi}(1530)^0$	$< 8.1 \times 10^{-5}$	CL=90%	1025	DESIG=73
$\Omega^-\overline{\Omega}^+$	$< 7.3 \times 10^{-5}$	CL=90%	774	DESIG=74
$\pi^0 p\overline{p}$	$(1.53 \pm 0.07) \times 10^{-4}$		1543	DESIG=35
$N(940)\overline{p} +$ c.c. $\rightarrow \pi^0 p\overline{p}$	$(6.4 {}^{+1.8}_{-1.3}) \times 10^{-5}$		–	DESIG=267
$N(1440)\overline{p} +$ c.c. $\rightarrow \pi^0 p\overline{p}$	$(7.3 {}^{+1.7}_{-1.5}) \times 10^{-5}$	S=2.5	–	DESIG=261
$N(1520)\overline{p} +$ c.c. $\rightarrow \pi^0 p\overline{p}$	$(6.4 {}^{+2.3}_{-1.8}) \times 10^{-6}$		–	DESIG=268
$N(1535)\overline{p} +$ c.c. $\rightarrow \pi^0 p\overline{p}$	$(2.5 \pm 1.0) \times 10^{-5}$		–	DESIG=269
$N(1650)\overline{p} +$ c.c. $\rightarrow \pi^0 p\overline{p}$	$(3.8 {}^{+1.4}_{-1.7}) \times 10^{-5}$		–	DESIG=270
$N(1720)\overline{p} +$ c.c. $\rightarrow \pi^0 p\overline{p}$	$(1.79 {}^{+0.26}_{-0.70}) \times 10^{-5}$		–	DESIG=271
$N(2300)\overline{p} +$ c.c. $\rightarrow \pi^0 p\overline{p}$	$(2.6 {}^{+1.2}_{-0.7}) \times 10^{-5}$		–	DESIG=272
$N(2570)\overline{p} +$ c.c. $\rightarrow \pi^0 p\overline{p}$	$(2.13 {}^{+0.40}_{-0.31}) \times 10^{-5}$		–	DESIG=273
$\pi^0 f_0(2100) \rightarrow \pi^0 p\overline{p}$	$(1.1 \pm 0.4) \times 10^{-5}$		–	DESIG=262
$\eta p\overline{p}$	$(5.7 \pm 0.6) \times 10^{-5}$		1373	DESIG=200
$\eta f_0(2100) \rightarrow \eta p\overline{p}$	$(1.2 \pm 0.4) \times 10^{-5}$		–	DESIG=263
$N(1535)\overline{p} \rightarrow \eta p\overline{p}$	$(4.4 \pm 0.7) \times 10^{-5}$		–	DESIG=264
$\omega p\overline{p}$	$(6.9 \pm 2.1) \times 10^{-5}$		1247	DESIG=77
$\phi p\overline{p}$	$< 2.4 \times 10^{-5}$	CL=90%	1109	DESIG=80
$\pi^+\pi^- p\overline{p}$	$(6.0 \pm 0.4) \times 10^{-4}$		1491	DESIG=31
$p\overline{n}\pi^-$ or c.c.	$(2.48 \pm 0.17) \times 10^{-4}$		–	DESIG=227
$p\overline{n}\pi^-\pi^0$	$(3.2 \pm 0.7) \times 10^{-4}$		1492	DESIG=228

$2(\pi^+\pi^-\pi^0)$	$(4.7 \pm 1.5) \times 10^{-3}$		1776	DESIG=221
$\eta\pi^+\pi^-$	$< 1.6 \times 10^{-4}$	CL=90%	1791	DESIG=202
$\eta\pi^+\pi^-\pi^0$	$(9.5 \pm 1.7) \times 10^{-4}$		1778	DESIG=203
$2(\pi^+\pi^-)\eta$	$(1.2 \pm 0.6) \times 10^{-3}$		1758	DESIG=251
$\eta'\pi^+\pi^-\pi^0$	$(4.5 \pm 2.1) \times 10^{-4}$		1692	DESIG=204
$\omega\pi^+\pi^-$	$(7.3 \pm 1.2) \times 10^{-4}$	S=2.1	1748	DESIG=75
$b_1^\pm\pi^\mp$	$(4.0 \pm 0.6) \times 10^{-4}$	S=1.1	1635	DESIG=40
$b_1^0\pi^0$	$(2.4 \pm 0.6) \times 10^{-4}$		–	DESIG=193
$\omega f_2(1270)$	$(2.2 \pm 0.4) \times 10^{-4}$		1515	DESIG=64
$\pi^+\pi^-K^+K^-$	$(7.5 \pm 0.9) \times 10^{-4}$	S=1.9	1726	DESIG=26
$\rho^0K^+K^-$	$(2.2 \pm 0.4) \times 10^{-4}$		1616	DESIG=205
$K^*(892)^0\overline{K}_2^*(1430)^0$	$(1.9 \pm 0.5) \times 10^{-4}$		1418	DESIG=66
$K^+K^-\pi^+\pi^-\eta$	$(1.3 \pm 0.7) \times 10^{-3}$		1574	DESIG=252
$K^+K^-2(\pi^+\pi^-)\pi^0$	$(1.00 \pm 0.31) \times 10^{-3}$		1611	DESIG=240
$K^+K^-2(\pi^+\pi^-)$	$(1.9 \pm 0.9) \times 10^{-3}$		1654	DESIG=222
$K_1(1270)^\pm K^\mp$	$(1.00 \pm 0.28) \times 10^{-3}$		1581	DESIG=41
$K_S^0K_S^0\pi^+\pi^-$	$(2.2 \pm 0.4) \times 10^{-4}$		1724	DESIG=225
$\rho^0p\overline{p}$	$(5.0 \pm 2.2) \times 10^{-5}$		1252	DESIG=210
$K^+\overline{K}^*(892)^0\pi^- +$ c.c.	$(6.7 \pm 2.5) \times 10^{-4}$		1674	DESIG=34
$2(\pi^+\pi^-)$	$(2.4 \pm 0.6) \times 10^{-4}$	S=2.2	1817	DESIG=24
$\rho^0\pi^+\pi^-$	$(2.2 \pm 0.6) \times 10^{-4}$	S=1.4	1750	DESIG=33
$K^+K^-\pi^+\pi^-\pi^0$	$(1.26 \pm 0.09) \times 10^{-3}$		1694	DESIG=206
$\omega f_0(1710) \rightarrow \omega K^+K^-$	$(5.9 \pm 2.2) \times 10^{-5}$		–	DESIG=216
$K^*(892)^0K^-\pi^+\pi^0 +$ c.c.	$(8.6 \pm 2.2) \times 10^{-4}$		–	DESIG=217
$K^*(892)^+K^-\pi^+\pi^- +$ c.c.	$(9.6 \pm 2.8) \times 10^{-4}$		–	DESIG=218
$K^*(892)^+K^-\rho^0 +$ c.c.	$(7.3 \pm 2.6) \times 10^{-4}$		–	DESIG=219
$K^*(892)^0K^-\rho^+ +$ c.c.	$(6.1 \pm 1.8) \times 10^{-4}$		–	DESIG=220
ηK^+K^-, no $\eta\phi$	$(3.1 \pm 0.4) \times 10^{-5}$		1664	DESIG=207
ωK^+K^-	$(1.85 \pm 0.25) \times 10^{-4}$	S=1.1	1614	DESIG=76
$3(\pi^+\pi^-)$	$(3.5 \pm 2.0) \times 10^{-4}$	S=2.8	1774	DESIG=32
$p\overline{p}\pi^+\pi^-\pi^0$	$(7.3 \pm 0.7) \times 10^{-4}$		1435	DESIG=211
K^+K^-	$(7.1 \pm 0.5) \times 10^{-5}$	S=1.5	1776	DESIG=23
$K_S^0K_L^0$	$(5.34 \pm 0.33) \times 10^{-5}$		1775	DESIG=85
$\pi^+\pi^-\pi^0$	$(2.01 \pm 0.17) \times 10^{-4}$	S=1.7	1830	DESIG=36
$\rho(2150)\pi \rightarrow \pi^+\pi^-\pi^0$	$(1.9 {}^{+1.2}_{-0.4}) \times 10^{-4}$		–	DESIG=201
$\rho(770)\pi \rightarrow \pi^+\pi^-\pi^0$	$(3.2 \pm 1.2) \times 10^{-5}$	S=1.8	–	DESIG=22
$\pi^+\pi^-$	$(7.8 \pm 2.6) \times 10^{-6}$		1838	DESIG=21
$K_1(1400)^\pm K^\mp$	$< 3.1 \times 10^{-4}$	CL=90%	1532	DESIG=42
$K_2^*(1430)^\pm K^\mp$	$(7.1 {}^{+1.3}_{-0.9}) \times 10^{-5}$		–	DESIG=265
$K^+K^-\pi^0$	$(4.07 \pm 0.31) \times 10^{-5}$		1754	DESIG=38
$K^+K^*(892)^-+$ c.c.	$(2.9 \pm 0.4) \times 10^{-5}$	S=1.2	1698	DESIG=39
$K^*(892)^0\overline{K}^0+$ c.c.	$(1.09 \pm 0.20) \times 10^{-4}$		1697	DESIG=194
$\phi\pi^+\pi^-$	$(1.17 \pm 0.29) \times 10^{-4}$	S=1.7	1690	DESIG=78
$\phi f_0(980) \rightarrow \pi^+\pi^-$	$(6.8 \pm 2.4) \times 10^{-5}$	S=1.1	–	DESIG=81
$2(K^+K^-)$	$(6.0 \pm 1.4) \times 10^{-5}$		1499	DESIG=208
ϕK^+K^-	$(7.0 \pm 1.6) \times 10^{-5}$		1546	DESIG=79
$2(K^+K^-)\pi^0$	$(1.10 \pm 0.28) \times 10^{-4}$		1440	DESIG=209
$\phi\eta$	$(3.10 \pm 0.31) \times 10^{-5}$		1654	DESIG=89
$\phi\eta'$	$(3.1 \pm 1.6) \times 10^{-5}$		1555	DESIG=90
$\omega\eta'$	$(3.2 {}^{+2.5}_{-2.1}) \times 10^{-5}$		1623	DESIG=91
$\omega\pi^0$	$(2.1 \pm 0.6) \times 10^{-5}$		1757	DESIG=92
$\rho\eta'$	$(1.9 {}^{+1.7}_{-1.2}) \times 10^{-5}$		1625	DESIG=93
$\rho\eta$	$(2.2 \pm 0.6) \times 10^{-5}$	S=1.1	1717	DESIG=94
$\omega\eta$	$< 1.1 \times 10^{-5}$	CL=90%	1715	DESIG=95
$\phi\pi^0$	$< 4 \times 10^{-7}$	CL=90%	1699	DESIG=96

$\eta_c \pi^+ \pi^- \pi^0$	$< 1.0 \times 10^{-3}$	CL=90%	–	DESIG=229
$p \overline{p} K^+ K^-$	$(2.7 \pm 0.7) \times 10^{-5}$		1118	DESIG=212
$\overline{\Lambda} n K^0_S +$ c.c.	$(8.1 \pm 1.8) \times 10^{-5}$		1324	DESIG=237
$\phi f'_2(1525)$	$(4.4 \pm 1.6) \times 10^{-5}$		1321	DESIG=67
$\Theta(1540) \overline{\Theta}(1540) \rightarrow K^0_S p K^- \overline{n} +$ c.c.	$< 8.8 \times 10^{-6}$	CL=90%	–	DESIG=195
$\Theta(1540) K^- \overline{n} \rightarrow K^0_S p K^- \overline{n}$	$< 1.0 \times 10^{-5}$	CL=90%	–	DESIG=196
$\Theta(1540) K^0_S \overline{p} \rightarrow K^0_S \overline{p} K^+ n$	$< 7.0 \times 10^{-6}$	CL=90%	–	DESIG=197
$\overline{\Theta}(1540) K^+ n \rightarrow K^0_S \overline{p} K^+ n$	$< 2.6 \times 10^{-5}$	CL=90%	–	DESIG=198
$\overline{\Theta}(1540) K^0_S p \rightarrow K^0_S p K^- \overline{n}$	$< 6.0 \times 10^{-6}$	CL=90%	–	DESIG=199
$K^0_S K^0_S$	$< 4.6 \times 10^{-6}$		1775	DESIG=86
Radiative decays				NODE=M071;CLUMP=C
$\gamma \chi_{c0}(1P)$	(9.84 ± 0.31) %		261	DESIG=56
$\gamma \chi_{c1}(1P)$	(9.3 ± 0.4) %		171	DESIG=58
$\gamma \chi_{c2}(1P)$	(8.76 ± 0.34) %		128	DESIG=59
$\gamma \eta_c(1S)$	$(3.4 \pm 0.5) \times 10^{-3}$	S=1.3	636	DESIG=61
$\gamma \eta_c(2S)$	$(7 \pm 5) \times 10^{-4}$		46	DESIG=63
$\gamma \pi^0$	$(1.6 \pm 0.4) \times 10^{-6}$		1841	DESIG=52
$\gamma \eta'(958)$	$(1.23 \pm 0.06) \times 10^{-4}$		1719	DESIG=54
$\gamma f_2(1270)$	$(2.1 \pm 0.4) \times 10^{-4}$		1623	DESIG=82
$\gamma f_0(1710) \rightarrow \gamma \pi \pi$	$(3.0 \pm 1.3) \times 10^{-5}$		–	DESIG=83
$\gamma f_0(1710) \rightarrow \gamma K \overline{K}$	$(6.0 \pm 1.6) \times 10^{-5}$		–	DESIG=84
$\gamma \gamma$	$< 1.4 \times 10^{-4}$	CL=90%	1843	DESIG=51
$\gamma \eta$	$(1.4 \pm 0.5) \times 10^{-6}$		1802	DESIG=53
$\gamma \eta \pi^+ \pi^-$	$(8.7 \pm 2.1) \times 10^{-4}$		1791	DESIG=230
$\gamma \eta(1405) \rightarrow \gamma K \overline{K} \pi$	$< 9 \times 10^{-5}$	CL=90%	1569	DESIG=62
$\gamma \eta(1405) \rightarrow \eta \pi^+ \pi^-$	$(3.6 \pm 2.5) \times 10^{-5}$		–	DESIG=232
$\gamma \eta(1475) \rightarrow K \overline{K} \pi$	$< 1.4 \times 10^{-4}$	CL=90%	–	DESIG=234
$\gamma \eta(1475) \rightarrow \eta \pi^+ \pi^-$	$< 8.8 \times 10^{-5}$	CL=90%	–	DESIG=235
$\gamma 2(\pi^+ \pi^-)$	$(4.0 \pm 0.6) \times 10^{-4}$		1817	DESIG=241
$\gamma K^{*0} K^+ \pi^- +$ c.c.	$(3.7 \pm 0.9) \times 10^{-4}$		1674	DESIG=242
$\gamma K^{*0} \overline{K}^{*0}$	$(2.4 \pm 0.7) \times 10^{-4}$		1613	DESIG=243
$\gamma K^0_S K^+ \pi^- +$ c.c.	$(2.6 \pm 0.5) \times 10^{-4}$		1753	DESIG=244
$\gamma K^+ K^- \pi^+ \pi^-$	$(1.9 \pm 0.5) \times 10^{-4}$		1726	DESIG=245
$\gamma p \overline{p}$	$(3.9 \pm 0.5) \times 10^{-5}$	S=2.0	1586	DESIG=246
$\gamma f_2(1950) \rightarrow \gamma p \overline{p}$	$(1.20 \pm 0.22) \times 10^{-5}$		–	DESIG=257
$\gamma f_2(2150) \rightarrow \gamma p \overline{p}$	$(7.2 \pm 1.8) \times 10^{-6}$		–	DESIG=258
$\gamma X(1835) \rightarrow \gamma p \overline{p}$	$(4.6 {}^{+1.8}_{-4.0}) \times 10^{-6}$		–	DESIG=259
$\gamma X \rightarrow \gamma p \overline{p}$	[g] $< 2 \times 10^{-6}$	CL=90%	–	DESIG=260
$\gamma \pi^+ \pi^- p \overline{p}$	$(2.8 \pm 1.4) \times 10^{-5}$		1491	DESIG=247
$\gamma 2(\pi^+ \pi^-) K^+ K^-$	$< 2.2 \times 10^{-4}$	CL=90%	1654	DESIG=248
$\gamma 3(\pi^+ \pi^-)$	$< 1.7 \times 10^{-4}$	CL=90%	1774	DESIG=249
$\gamma K^+ K^- K^+ K^-$	$< 4 \times 10^{-5}$	CL=90%	1499	DESIG=250
$\gamma \gamma J/\psi$	$(3.1 {}^{+1.0}_{-1.2}) \times 10^{-4}$		542	DESIG=266

$\psi(3770)$

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

NODE=M053

Mass $m = 3773.15 \pm 0.33$ MeV NODE=M053M;DTYPE=M

Full width $\Gamma = 27.2 \pm 1.0$ MeV NODE=M053W;DTYPE=G

$\Gamma_{ee} = 0.262 \pm 0.018$ keV (S = 1.4) NODE=M053W1;DTYPE=E

In addition to the dominant decay mode to $D\overline{D}$, $\psi(3770)$ was found to decay into the final states containing the J/ψ (BAI 05, ADAM 06). ADAMS 06 and HUANG 06A searched for various decay modes with light hadrons and found a statistically significant signal for the decay to $\phi\eta$ only (ADAMS 06). NODE=M053220;NODE=M053

$\psi(3770)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$D\overline{D}$	$(93\ ^{+8}_{-9})$ %	S=2.0	285	DESIG=2
$D^0\overline{D}^0$	(52 ± 5) %	S=2.0	285	DESIG=5
D^+D^-	(41 ± 4) %	S=2.0	252	DESIG=6
$J/\psi\pi^+\pi^-$	$(1.93 \pm 0.28) \times 10^{-3}$		560	DESIG=4
$J/\psi\pi^0\pi^0$	$(8.0 \pm 3.0) \times 10^{-4}$		564	DESIG=46
$J/\psi\eta$	$(9 \pm 4) \times 10^{-4}$		360	DESIG=47
$J/\psi\pi^0$	$< 2.8 \times 10^{-4}$	CL=90%	603	DESIG=48
e^+e^-	$(9.6 \pm 0.7) \times 10^{-6}$	S=1.3	1887	DESIG=1
Decays to light hadrons				NODE=M053;CLUMP=H
$b_1(1235)\pi$	$< 1.4 \times 10^{-5}$	CL=90%	1683	DESIG=20
$\phi\eta'$	$< 7 \times 10^{-4}$	CL=90%	1607	DESIG=17
$\omega\eta'$	$< 4 \times 10^{-4}$	CL=90%	1672	DESIG=16
$\rho^0\eta'$	$< 6 \times 10^{-4}$	CL=90%	1674	DESIG=15
$\phi\eta$	$(3.1 \pm 0.7) \times 10^{-4}$		1703	DESIG=8
$\omega\eta$	$< 1.4 \times 10^{-5}$	CL=90%	1762	DESIG=14
$\rho^0\eta$	$< 5 \times 10^{-4}$	CL=90%	1764	DESIG=13
$\phi\pi^0$	$< 3 \times 10^{-5}$	CL=90%	1746	DESIG=12
$\omega\pi^0$	$< 6 \times 10^{-4}$	CL=90%	1803	DESIG=11
$\pi^+\pi^-\pi^0$	$< 5 \times 10^{-6}$	CL=90%	1874	DESIG=9
$\rho\pi$	$< 5 \times 10^{-6}$	CL=90%	1804	DESIG=10
$K^*(892)^+K^-$ + c.c.	$< 1.4 \times 10^{-5}$	CL=90%	1745	DESIG=19
$K^*(892)^0\overline{K}^0$ + c.c.	$< 1.2 \times 10^{-3}$	CL=90%	1744	DESIG=18
$K^0_S K^0_L$	$< 1.2 \times 10^{-5}$	CL=90%	1820	DESIG=3
$2(\pi^+\pi^-)$	$< 1.12 \times 10^{-3}$	CL=90%	1861	DESIG=21
$2(\pi^+\pi^-)\pi^0$	$< 1.06 \times 10^{-3}$	CL=90%	1843	DESIG=22
$2(\pi^+\pi^-\pi^0)$	< 5.85 %	CL=90%	1821	DESIG=208
$\omega\pi^+\pi^-$	$< 6.0 \times 10^{-4}$	CL=90%	1794	DESIG=24
$3(\pi^+\pi^-)$	$< 9.1 \times 10^{-3}$		1819	DESIG=52
$3(\pi^+\pi^-)\pi^0$	< 1.37 %		1792	DESIG=55
$3(\pi^+\pi^-)2\pi^0$	< 11.74 %	CL=90%	1760	DESIG=210
$\eta\pi^+\pi^-$	$< 1.24 \times 10^{-3}$	CL=90%	1836	DESIG=23
$\pi^+\pi^-2\pi^0$	$< 8.9 \times 10^{-3}$	CL=90%	1862	DESIG=206
$\rho^0\pi^+\pi^-$	$< 6.9 \times 10^{-3}$	CL=90%	1796	DESIG=64
$\eta 3\pi$	$< 1.34 \times 10^{-3}$	CL=90%	1824	DESIG=25
$\eta 2(\pi^+\pi^-)$	< 2.43 %		1804	DESIG=53
$\eta\rho^0\pi^+\pi^-$	< 1.45 %	CL=90%	1708	DESIG=221
$\eta' 3\pi$	$< 2.44 \times 10^{-3}$	CL=90%	1740	DESIG=26
$K^+K^-\pi^+\pi^-$	$< 9.0 \times 10^{-4}$	CL=90%	1772	DESIG=27
$\phi\pi^+\pi^-$	$< 4.1 \times 10^{-4}$	CL=90%	1737	DESIG=28
$K^+K^-2\pi^0$	$< 4.2 \times 10^{-3}$	CL=90%	1774	DESIG=207
$4(\pi^+\pi^-)$	< 1.67 %	CL=90%	1757	DESIG=62
$4(\pi^+\pi^-)\pi^0$	< 3.06 %	CL=90%	1720	DESIG=63
$\phi f_0(980)$	$< 4.5 \times 10^{-4}$	CL=90%	1597	DESIG=29
$K^+K^-\pi^+\pi^-\pi^0$	$< 2.36 \times 10^{-3}$	CL=90%	1741	DESIG=30
$K^+K^-\rho^0\pi^0$	$< 8 \times 10^{-4}$	CL=90%	1624	DESIG=67
$K^+K^-\rho^+\pi^-$	< 1.46 %	CL=90%	1622	DESIG=68
ωK^+K^-	$< 3.4 \times 10^{-4}$	CL=90%	1664	DESIG=32
$\phi\pi^+\pi^-\pi^0$	$< 3.8 \times 10^{-3}$	CL=90%	1722	DESIG=69
$K^{*0}K^-\pi^+\pi^0$ + c.c.	< 1.62 %	CL=90%	1693	DESIG=70
$K^{*+}K^-\pi^+\pi^-$ + c.c.	< 3.23 %	CL=90%	1692	DESIG=71
$K^+K^-\pi^+\pi^-2\pi^0$	< 2.67 %	CL=90%	1705	DESIG=209

$K^+K^-2(\pi^+\pi^-)$	$<$ 1.03	%	CL=90%	1702	DESIG=57
$K^+K^-2(\pi^+\pi^-)\pi^0$	$<$ 3.60	%	CL=90%	1660	DESIG=58
ηK^+K^-	$<$ 4.1	$\times 10^{-4}$	CL=90%	1712	DESIG=31
$\eta K^+K^-\pi^+\pi^-$	$<$ 1.24	%	CL=90%	1624	DESIG=222
$\rho^0 K^+K^-$	$<$ 5.0	$\times 10^{-3}$	CL=90%	1665	DESIG=65
$2(K^+K^-)$	$<$ 6.0	$\times 10^{-4}$	CL=90%	1552	DESIG=33
ϕK^+K^-	$<$ 7.5	$\times 10^{-4}$	CL=90%	1598	DESIG=34
$2(K^+K^-)\pi^0$	$<$ 2.9	$\times 10^{-4}$	CL=90%	1493	DESIG=35
$2(K^+K^-)\pi^+\pi^-$	$<$ 3.2	$\times 10^{-3}$	CL=90%	1425	DESIG=59
$K^0_S K^-\pi^+$	$<$ 3.2	$\times 10^{-3}$	CL=90%	1799	DESIG=200
$K^0_S K^-\pi^+\pi^0$	$<$ 1.33	%	CL=90%	1773	DESIG=201
$K^0_S K^-\rho^+$	$<$ 6.6	$\times 10^{-3}$	CL=90%	1664	DESIG=214
$K^0_S K^-2\pi^+\pi^-$	$<$ 8.7	$\times 10^{-3}$	CL=90%	1739	DESIG=202
$K^0_S K^-\pi^+\rho^0$	$<$ 1.6	%	CL=90%	1621	DESIG=215
$K^0_S K^-\pi^+\eta$	$<$ 1.3	%	CL=90%	1669	DESIG=216
$K^0_S K^-2\pi^+\pi^-\pi^0$	$<$ 4.18	%	CL=90%	1703	DESIG=203
$K^0_S K^-2\pi^+\pi^-\eta$	$<$ 4.8	%	CL=90%	1570	DESIG=217
$K^0_S K^-\pi^+2(\pi^+\pi^-)$	$<$ 1.22	%	CL=90%	1658	DESIG=204
$K^0_S K^-\pi^+2\pi^0$	$<$ 2.65	%	CL=90%	1742	DESIG=205
$K^0_S K^-K^+K^-\pi^+$	$<$ 4.9	$\times 10^{-3}$	CL=90%	1490	DESIG=218
$K^0_S K^-K^+K^-\pi^+\pi^0$	$<$ 3.0	%	CL=90%	1427	DESIG=219
$K^0_S K^-K^+K^-\pi^+\eta$	$<$ 2.2	%	CL=90%	1214	DESIG=220
$K^{*0}K^-\pi^+$ + c.c.	$<$ 9.7	$\times 10^{-3}$	CL=90%	1722	DESIG=60
$p\overline{p}\pi^0$	$<$ 1.2	$\times 10^{-3}$		1595	DESIG=54
$p\overline{p}\pi^+\pi^-$	$<$ 5.8	$\times 10^{-4}$	CL=90%	1544	DESIG=36
$\Lambda\overline{\Lambda}$	$<$ 1.2	$\times 10^{-4}$	CL=90%	1521	DESIG=42
$p\overline{p}\pi^+\pi^-\pi^0$	$<$ 1.85	$\times 10^{-3}$	CL=90%	1490	DESIG=37
$\omega p\overline{p}$	$<$ 2.9	$\times 10^{-4}$	CL=90%	1309	DESIG=39
$\Lambda\overline{\Lambda}\pi^0$	$<$ 1.2	$\times 10^{-3}$	CL=90%	1469	DESIG=72
$p\overline{p}2(\pi^+\pi^-)$	$<$ 2.6	$\times 10^{-3}$	CL=90%	1425	DESIG=61
$\eta p\overline{p}$	$<$ 5.4	$\times 10^{-4}$	CL=90%	1430	DESIG=38
$\eta p\overline{p}\pi^+\pi^-$	$<$ 3.3	$\times 10^{-3}$	CL=90%	1284	DESIG=223
$\rho^0 p\overline{p}$	$<$ 1.7	$\times 10^{-3}$	CL=90%	1313	DESIG=66
$p\overline{p}K^+K^-$	$<$ 3.2	$\times 10^{-4}$	CL=90%	1185	DESIG=40
$\eta p\overline{p}K^+K^-$	$<$ 6.9	$\times 10^{-3}$	CL=90%	736	DESIG=224
$\pi^0 p\overline{p}K^+K^-$	$<$ 1.2	$\times 10^{-3}$	CL=90%	1093	DESIG=225
$\phi p\overline{p}$	$<$ 1.3	$\times 10^{-4}$	CL=90%	1178	DESIG=41
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$<$ 2.5	$\times 10^{-4}$	CL=90%	1405	DESIG=43
$\Lambda\overline{p}K^+$	$<$ 2.8	$\times 10^{-4}$	CL=90%	1387	DESIG=44
$\Lambda\overline{p}K^+\pi^+\pi^-$	$<$ 6.3	$\times 10^{-4}$	CL=90%	1234	DESIG=45
Radiative decays					NODE=M053;CLUMP=R
$\gamma\chi_{c2}$	$<$ 9	$\times 10^{-4}$	CL=90%	211	DESIG=51
$\gamma\chi_{c1}$	(2.9 $\pm$0.6)	$\times 10^{-3}$		253	DESIG=50
$\gamma\chi_{c0}$	(7.3 $\pm$0.9)	$\times 10^{-3}$		341	DESIG=49
$\gamma\eta'$	$<$ 1.8	$\times 10^{-4}$	CL=90%	1765	DESIG=213
$\gamma\eta$	$<$ 1.5	$\times 10^{-4}$	CL=90%	1847	DESIG=212
$\gamma\pi^0$	$<$ 2	$\times 10^{-4}$	CL=90%	1884	DESIG=211

X(3872)

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

NODE=M176

Mass $m = 3871.68 \pm 0.17$ MeV — NODE=M176M;DTYPE=M

$m_{X(3872)} - m_{J/\psi} = 775 \pm 4$ MeV — NODE=M176DM;DTYPE=D

$m_{X(3872)} - m_{\psi(2S)}$ — NODE=M176DM2;DTYPE=D

Full width $\Gamma < 1.2$ MeV, CL = 90% — NODE=M176W;DTYPE=G

X(3872) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi^+\pi^- J/\psi(1S)$	$>$ 2.6 %	650	NODE=M176215;DESIG=2
$\omega J/\psi(1S)$	$>$ 1.9 %	†	DESIG=13
$D^0\overline{D}^0\pi^0$	$>$32 %	116	DESIG=8
$\overline{D}^{*0}D^0$	$>$24 %	†	DESIG=12
$\gamma J/\psi$	$>$ 6 $\times 10^{-3}$	697	DESIG=9
$\gamma\psi(2S)$	[h] $>$ 3.0 %	181	DESIG=11
$\pi^+\pi^-\eta_c(1S)$	not seen	746	DESIG=14;OUR EVAL;→ UNCHECKED ←

$\chi_{c0}(2P)$ was $X(3915)$

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

NODE=M159

Mass $m = 3918.4 \pm 1.9$ MeV NODE=M159M;DTYPE=M

Full width $\Gamma = 20 \pm 5$ MeV (S = 1.1) NODE=M159W;DTYPE=G

$\chi_{c0}(2P)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\omega J/\psi$	seen	222	NODE=M159215;DESIG=1;OUR EST; → UNCHECKED ←
$\pi^+\pi^-\eta_c(1S)$	not seen	785	DESIG=4;OUR EVAL;→ UNCHECKED ←
$\gamma\gamma$	seen	1959	DESIG=2

$\chi_{c2}(2P)$

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

NODE=M050

Mass $m = 3927.2 \pm 2.6$ MeV NODE=M050M;DTYPE=M

Full width $\Gamma = 24 \pm 6$ MeV NODE=M050W;DTYPE=G

$\chi_{c2}(2P)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\gamma\gamma$	seen	1964	NODE=M050215;DESIG=1;OUR EVAL; → UNCHECKED ←
$D\overline{D}$	seen	615	DESIG=2;OUR EVAL;→ UNCHECKED ←
D^+D^-	seen	600	DESIG=3;OUR EVAL;→ UNCHECKED ←
$D^0\overline{D}^0$	seen	615	DESIG=4;OUR EVAL;→ UNCHECKED ←
$\pi^+\pi^-\eta_c(1S)$	not seen	792	DESIG=7;OUR EVAL;→ UNCHECKED ←

$\psi(4040)$ [i]

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

NODE=M072

Mass $m = 4039 \pm 1$ MeV NODE=M072M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 80 \pm 10$ MeV NODE=M072W;DTYPE=G;OUR EST; → UNCHECKED ←

$\Gamma_{ee} = 0.86 \pm 0.07$ keV NODE=M072W5;DTYPE=E;OUR EST; → UNCHECKED ←

Due to the complexity of the $c\overline{c}$ threshold region, in this listing, "seen" ("not seen") means that a cross section for the mode in question has been measured at effective $\sqrt{s}$ near this particle's central mass value, more (less) than 2σ above zero, without regard to any peaking behavior in $\sqrt{s}$ or absence thereof. See mode listing(s) for details and references.

NODE=M072215;NODE=M072

ψ(4040) DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$e^+ e^-$	$(1.07 \pm 0.16) \times 10^{-5}$		2019	DESIG=5
$D\overline{D}$	seen		775	DESIG=17;OUR EST;→ UNCHECKED ←
$D^0\overline{D}^0$	seen		775	DESIG=1
$D^+ D^-$	seen		763	DESIG=18
$D^*\overline{D}+$ c.c.	seen		569	DESIG=19;OUR EST;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^0+$ c.c.	seen		575	DESIG=2
$D^*(2010)^+ D^-+$ c.c.	seen		561	DESIG=20
$D^*\overline{D}^*$	seen		193	DESIG=21;OUR EST;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^*(2007)^0$	seen		224	DESIG=3
$D^*(2010)^+ D^*(2010)^-$	seen		193	DESIG=22
$D^0 D^-\pi^+$+c.c. (excl. $D^*(2007)^0\overline{D}^0$ +c.c., $D^*(2010)^+ D^-$ +c.c.)	not seen		–	DESIG=24
$D\overline{D}^*\pi$(excl. $D^*\overline{D}^*$)	not seen		–	DESIG=25
$D^0\overline{D}^{*-}\pi^+$+c.c. (excl. $D^*(2010)^+ D^*(2010)^-$)	seen		–	DESIG=26
$D_s^+ D_s^-$	seen		451	DESIG=27
$J/\psi\pi^+\pi^-$	$< 4 \times 10^{-3}$	90%	794	DESIG=7
$J/\psi\pi^0\pi^0$	$< 2 \times 10^{-3}$	90%	797	DESIG=8
$J/\psi\eta$	$(5.2 \pm 0.7) \times 10^{-3}$		675	DESIG=9
$J/\psi\pi^0$	$< 2.8 \times 10^{-4}$	90%	823	DESIG=10
$J/\psi\pi^+\pi^-\pi^0$	$< 2 \times 10^{-3}$	90%	746	DESIG=11
$\chi_{c1}\gamma$	< 1.1 %	90%	494	DESIG=12
$\chi_{c2}\gamma$	< 1.7 %	90%	454	DESIG=13
$\chi_{c1}\pi^+\pi^-\pi^0$	< 1.1 %	90%	306	DESIG=14
$\chi_{c2}\pi^+\pi^-\pi^0$	< 3.2 %	90%	233	DESIG=15
$h_c(1P)\pi^+\pi^-$	$< 3 \times 10^{-3}$	90%	403	DESIG=28
$\phi\pi^+\pi^-$	$< 3 \times 10^{-3}$	90%	1880	DESIG=16

ψ(4160) [i]

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

NODE=M025

Mass $m = 4153 \pm 3$ MeV

NODE=M025M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 103 \pm 8$ MeV

NODE=M025W;DTYPE=G;OUR EST; → UNCHECKED ←

$\Gamma_{ee} = 0.83 \pm 0.07$ keV

NODE=M025W1;DTYPE=E;OUR EST; → UNCHECKED ←

Due to the complexity of the $c\overline{c}$ threshold region, in this listing, "seen" ("not seen") means that a cross section for the mode in question has been measured at effective $\sqrt{s}$ near this particle's central mass value, more (less) than 2σ above zero, without regard to any peaking behavior in $\sqrt{s}$ or absence thereof. See mode listing(s) for details and references.

NODE=M025215;NODE=M025

ψ(4160) DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$e^+ e^-$	$(8.1 \pm 0.9) \times 10^{-6}$		2076	DESIG=1
$D\overline{D}$	seen		913	DESIG=15;OUR EVAL;→ UNCHECKED ←
$D^0\overline{D}^0$	seen		913	DESIG=16
$D^+ D^-$	seen		904	DESIG=17
$D^*\overline{D}+$ c.c.	seen		746	DESIG=18;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^0+$ c.c.	seen		751	DESIG=19
$D^*(2010)^+ D^-+$ c.c.	seen		740	DESIG=20
$D^*\overline{D}^*$	seen		520	DESIG=21;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^*(2007)^0$	seen		533	DESIG=22
$D^*(2010)^+ D^*(2010)^-$	seen		520	DESIG=23
$D^0 D^- \pi^+$+c.c. (excl. $D^*(2007)^0\overline{D}^0$ +c.c., $D^*(2010)^+ D^-$ +c.c.)	not seen		–	DESIG=24
$D\overline{D}^*\pi$+c.c. (excl. $D^*\overline{D}^*$)	seen		–	DESIG=25
$D^0 D^{*-}\pi^+$+c.c. (excl. $D^*(2010)^+ D^*(2010)^-$)	not seen		–	DESIG=26
$D_s^+ D_s^-$	not seen		661	DESIG=27
$D_s^{*+} D_s^-$+c.c.	seen		385	DESIG=28
$J/\psi\pi^+\pi^-$	$< 3 \times 10^{-3}$	90%	888	DESIG=2
$J/\psi\pi^0\pi^0$	$< 3 \times 10^{-3}$	90%	891	DESIG=3
$J/\psi K^+ K^-$	$< 2 \times 10^{-3}$	90%	324	DESIG=4
$J/\psi\eta$	$< 8 \times 10^{-3}$	90%	786	DESIG=5
$J/\psi\pi^0$	$< 1 \times 10^{-3}$	90%	914	DESIG=6
$J/\psi\eta'$	$< 5 \times 10^{-3}$	90%	385	DESIG=7
$J/\psi\pi^+\pi^-\pi^0$	$< 1 \times 10^{-3}$	90%	847	DESIG=8
$\psi(2S)\pi^+\pi^-$	$< 4 \times 10^{-3}$	90%	353	DESIG=9
$\chi_{c1}\gamma$	$< 7 \times 10^{-3}$	90%	593	DESIG=10
$\chi_{c2}\gamma$	< 1.3 %	90%	554	DESIG=11
$\chi_{c1}\pi^+\pi^-\pi^0$	$< 2 \times 10^{-3}$	90%	452	DESIG=12
$\chi_{c2}\pi^+\pi^-\pi^0$	$< 8 \times 10^{-3}$	90%	398	DESIG=13
$h_c(1P)\pi^+\pi^-$	$< 5 \times 10^{-3}$	90%	519	DESIG=29
$h_c(1P)\pi^0\pi^0$	$< 2 \times 10^{-3}$	90%	523	DESIG=30
$h_c(1P)\eta$	$< 2 \times 10^{-3}$	90%	282	DESIG=31
$h_c(1P)\pi^0$	$< 4 \times 10^{-4}$	90%	567	DESIG=32
$\phi\pi^+\pi^-$	$< 2 \times 10^{-3}$	90%	1941	DESIG=14

$X(4260)$

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

NODE=M074

Mass $m = 4250 \pm 9$ MeV (S = 1.6)

NODE=M074M;DTYPE=M

Full width $\Gamma = 108 \pm 12$ MeV

NODE=M074W;DTYPE=G

X(4260) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$J/\psi\pi^+\pi^-$	seen	966	NODE=M074215;DESIG=2;OUR EVAL; → UNCHECKED ←
$J/\psi f_0(980)$, $f_0(980) \to \pi^+\pi^-$	seen	–	DESIG=41;OUR EVAL;→ UNCHECKED ←
$J/\psi\pi^0\pi^0$	seen	968	DESIG=4;OUR EVAL;→ UNCHECKED ←
$J/\psi K^+K^-$	seen	510	DESIG=5;OUR EVAL;→ UNCHECKED ←
$J/\psi\eta$	not seen	874	DESIG=6;OUR EVAL;→ UNCHECKED ←
$J/\psi\pi^0$	not seen	990	DESIG=7;OUR EVAL;→ UNCHECKED ←
$J/\psi\eta'$	not seen	550	DESIG=8;OUR EVAL;→ UNCHECKED ←
$J/\psi\pi^+\pi^-\pi^0$	not seen	929	DESIG=9;OUR EVAL;→ UNCHECKED ←
$J/\psi\eta\eta$	not seen	307	DESIG=10;OUR EVAL;→ UNCHECKED ←
$\psi(2S)\pi^+\pi^-$	not seen	457	DESIG=11;OUR EVAL;→ UNCHECKED ←
$\psi(2S)\eta$	not seen	124	DESIG=12;OUR EVAL;→ UNCHECKED ←
$\chi_{c0}\omega$	not seen	262	DESIG=13;OUR EVAL;→ UNCHECKED ←
$\chi_{c1}\gamma$	not seen	675	DESIG=14;OUR EVAL;→ UNCHECKED ←
$\chi_{c2}\gamma$	not seen	637	DESIG=15;OUR EVAL;→ UNCHECKED ←
$\chi_{c1}\pi^+\pi^-\pi^0$	not seen	558	DESIG=16;OUR EVAL;→ UNCHECKED ←
$\chi_{c2}\pi^+\pi^-\pi^0$	not seen	510	DESIG=17;OUR EVAL;→ UNCHECKED ←
$h_c(1P)\pi^+\pi^-$	not seen	611	DESIG=40;OUR EVAL;→ UNCHECKED ←
$\phi\pi^+\pi^-$	not seen	1992	DESIG=18;OUR EVAL;→ UNCHECKED ←
$\phi f_0(980) \to \phi\pi^+\pi^-$	not seen	–	DESIG=22;OUR EVAL;→ UNCHECKED ←
$D\overline{D}$	not seen	1019	DESIG=19;OUR EVAL;→ UNCHECKED ←
$D^0\overline{D}^0$	not seen	1019	DESIG=31
D^+D^-	not seen	1010	DESIG=32
$D^*\overline{D}$+c.c.	not seen	887	DESIG=23;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^0$+c.c.	not seen	–	DESIG=33
$D^*(2010)^+D^-$+c.c.	not seen	–	DESIG=34
$D^*\overline{D}^*$	not seen	689	DESIG=24;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^*(2007)^0$	not seen	698	DESIG=35
$D^*(2010)^+D^*(2010)^-$	not seen	689	DESIG=36
$D^0D^-\pi^+$+c.c. (excl. $D^*(2007)^0\overline{D}^{*0}$ +c.c., $D^*(2010)^+D^-$ +c.c.)	not seen	–	DESIG=38
$D\overline{D}^*\pi$+c.c. (excl. $D^*\overline{D}^*$)	not seen	723	DESIG=25
$D^0D^{*-}\pi^+$+c.c. (excl. $D^*(2010)^+D^*(2010)^-$)	not seen	–	DESIG=39
$D^0D^*(2010)^-\pi^+$+c.c.	not seen	716	DESIG=30;OUR EVAL;→ UNCHECKED ←
$D^*\overline{D}^*\pi$	not seen	445	DESIG=26
$D_s^+D_s^-$	not seen	800	DESIG=27
$D_s^{*+}D_s^-$+c.c.	not seen	615	DESIG=28
$D_s^{*+}D_s^{*-}$	not seen	231	DESIG=29
$p\overline{p}$	not seen	1907	DESIG=3;OUR EVAL;→ UNCHECKED ←
$K_S^0K^\pm\pi^\mp$	not seen	2047	DESIG=20;OUR EVAL;→ UNCHECKED ←
$K^+K^-\pi^0$	not seen	2049	DESIG=21;OUR EVAL;→ UNCHECKED ←

X(4360)

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

NODE=M181

$X(4360)$ MASS $= 4361 \pm 13$ MeV NODE=M181M;DTYPE=M

$X(4360)$ WIDTH $= 74 \pm 18$ MeV NODE=M181W;DTYPE=G

X(4360) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\psi(2S)\pi^+\pi^-$	seen	567	NODE=M181215;DESIG=2;OUR EVAL; → UNCHECKED ←

ψ(4415) [i]

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

NODE=M073

Mass $m = 4421 \pm 4$ MeV NODE=M073M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 62 \pm 20$ MeV NODE=M073W;DTYPE=G;OUR EST; → UNCHECKED ←

$\Gamma_{ee} = 0.58 \pm 0.07$ keV NODE=M073W1;DTYPE=E;OUR EST; → UNCHECKED ←

Due to the complexity of the $c\overline{c}$ threshold region, in this listing, "seen" ("not seen") means that a cross section for the mode in question has been measured at effective $\sqrt{s}$ near this particle's central mass value, more (less) than 2σ above zero, without regard to any peaking behavior in $\sqrt{s}$ or absence thereof. See mode listing(s) for details and references.

NODE=M073215;NODE=M073

$\psi(4415)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$D\overline{D}$	not seen		1187	DESIG=7;OUR EVAL;→ UNCHECKED ←
$D^0\overline{D}^0$	seen		1187	DESIG=8
D^+D^-	seen		1179	DESIG=9
$D^*\overline{D}+$ c.c.	not seen		1063	DESIG=10;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^0+$ c.c.	seen		1066	DESIG=11
$D^*(2010)^+D^-+$ c.c.	seen		1059	DESIG=12
$D^*\overline{D}^*$	not seen		919	DESIG=13;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^*(2007)^0+$ c.c.	seen		926	DESIG=14
$D^*(2010)^+D^*(2010)^-+$ c.c.	seen		919	DESIG=15
$D^0D^-\pi^+$ (excl. $D^*(2007)^0\overline{D}^0$ +c.c., $D^*(2010)^+D^-$ +c.c.	$<$ 2.3 %	90%	–	DESIG=4
$D\overline{D}_2^*(2460) \rightarrow D^0D^-\pi^+$+c.c.	(10 ±4) %		–	DESIG=5
$D^0D^{*-}\pi^+$+c.c.	$<$ 11 %	90%	926	DESIG=6
$D_s^+D_s^-$	not seen		1006	DESIG=16
$D_s^{*+}D_s^-$+c.c.	seen		–	DESIG=17
$D_s^{*+}D_s^{*-}$	not seen		651	DESIG=18
e^+e^-	(9.4±3.2) $\times 10^{-6}$		2210	DESIG=1

X(4660)

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

NODE=M189

$X(4660)$ MASS = 4664 ± 12 MeV

NODE=M189M;DTYPE=M

$X(4660)$ WIDTH = 48 ± 15 MeV

NODE=M189W;DTYPE=G

X(4660) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\psi(2S)\pi^+\pi^-$	seen	838	NODE=M189215;DESIG=2;OUR EVAL; → UNCHECKED ←

NOTES

[a] For $E_\gamma > 100$ MeV. LINKAGE=EGM

[b] The value is for the sum of the charge states or particle/antiparticle states indicated. LINKAGE=SG

[c] Includes $p\overline{p}\pi^+\pi^-\gamma$ and excludes $p\overline{p}\eta$, $p\overline{p}\omega$, $p\overline{p}\eta'$. LINKAGE=MF

[d] See the "Note on the $\eta(1405)$" in the $\eta(1405)$ Particle Listings. LINKAGE=MG

[e] For a narrow state A with mass less than 960 MeV. LINKAGE=NSA

[f] For a narrow scalar or pseudoscalar A^0 with mass 0.21–3.0 GeV. LINKAGE=NA0

[g] For a narrow resonance in the range $2.2 < M(X) < 2.8$ GeV. LINKAGE=NMR

[h] BHARDWAJ 11 does not observe this decay and presents a stronger 90% CL limit than this value. See measurements listings for details. LINKAGE=BBL

[i] J^{PC} known by production in e^+e^- via single photon annihilation. I^G is not known; interpretation of this state as a single resonance is unclear because of the expectation of substantial threshold effects in this energy region. LINKAGE=MPD