

$c\bar{c}$ MESONS (including possibly non- $q\bar{q}$ states)

NODE=MXXX025

 $\eta_c(1S)$

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

Mass $m = 2984.1 \pm 0.4$ MeV ($S = 1.2$)Full width $\Gamma = 30.5 \pm 0.5$ MeV ($S = 1.2$)

NODE=M026

NODE=M026M;DTYPE=M

NODE=M026W;DTYPE=G

$\eta_c(1S)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
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Decays involving hadronic resonances

$\eta'(958)\pi\pi$	(2.0 $\pm$ 0.4) %	S=1.4	1323
$\eta'(958)K\bar{K}$	(1.73 $\pm$ 0.35) %		1131
$\eta'(958)\eta\eta$	(3.4 $\pm$ 0.6) $\times 10^{-3}$		1081
$\rho\rho$	(1.8 $\pm$ 0.4) %		1275
$K^*(892)^0 K^- \pi^+ + \text{c.c.}$	(1.8 $\pm$ 0.5) %		1278
$K^*(892)\bar{K}^*(892)$	(7.0 $\pm$ 1.2) $\times 10^{-3}$		1196
$K^*(892)^0 \bar{K}^*(892)^0 \pi^+ \pi^-$	(1.4 $\pm$ 0.6) %		1074
$\phi K^+ K^-$	(3.3 $^{+1.2}_{-1.1}$) $\times 10^{-3}$		1104
$\phi\phi$	(1.8 $\pm$ 0.4) $\times 10^{-3}$	S=2.3	1089
$\phi 2(\pi^+ \pi^-)$	< 4 $\times 10^{-3}$	CL=90%	1251
$a_0(980)\pi$	seen		1327
$a_2(1320)\pi$	seen		1196
$K^*(892)\bar{K} + \text{c.c.}$	< 1.28 %	CL=90%	1310
$f_2(1270)\eta$	seen		1145
$f_2(1270)\eta'$	seen		984
$\omega\omega$	(2.7 $\pm$ 0.9) $\times 10^{-3}$	S=2.1	1270
$\omega\phi$	< 2.5 $\times 10^{-4}$	CL=90%	1185
$f_2(1270)f_2(1270)$	(1.08 $\pm$ 0.27) %		774
$f_2(1270)f_2'(1525)$	(9.7 $\pm$ 3.2) $\times 10^{-3}$		524
$f_0(500)\eta$	seen		—
$f_0(500)\eta'$	seen		—
$f_0(980)\eta$	seen		1265
$f_0(980)\eta'$	seen		1130
$f_0(1500)\eta$	seen		1016
$f_0(1710)\eta'$	seen		623
$f_0(2100)\eta'$	seen		†
$f_0(2200)\eta$	seen		498
$a_0(1320)\pi$	seen		—
$a_0(1450)\pi$	seen		1140
$a_2(1700)\pi$	seen		999
$a_0(1710)\pi$	seen		994
$a_0(1950)\pi$	seen		860
$K_0^*(1430)\bar{K} + \text{c.c.}$	seen		1086
$K_2^*(1430)\bar{K} + \text{c.c.}$	seen		1084
$K_0^*(1950)\bar{K} + \text{c.c.}$	seen		742
$K_0^*(2600)\bar{K} + \text{c.c.}$	seen		—

NODE=M026215;NODE=M026;CLUMP=A

DESIG=24

DESIG=85

DESIG=93

DESIG=19

DESIG=26

DESIG=18

DESIG=57

DESIG=28

DESIG=17

DESIG=58

DESIG=21

DESIG=22

DESIG=40

DESIG=23

DESIG=92

DESIG=20

DESIG=47

DESIG=46

DESIG=59

DESIG=86

DESIG=87

DESIG=70

DESIG=88

DESIG=71

DESIG=90

DESIG=91

DESIG=72

DESIG=74

DESIG=75

DESIG=94

DESIG=97

DESIG=79

DESIG=76

DESIG=77

DESIG=78

DESIG=95

Decays into stable hadrons

$K\bar{K}\pi$	(7.1 $\pm$ 0.4) %	S=1.1	1381	NODE=M026;CLUMP=B DESIG=14
$K\bar{K}\eta$	(1.32 $\pm$ 0.15) %		1265	DESIG=25
$\eta\pi^+\pi^-$	(1.6 $\pm$ 0.4) %		1428	DESIG=16
$\eta 2(\pi^+\pi^-)$	(4.3 $\pm$ 1.3) %		1386	DESIG=61
$K^+K^-\pi^+\pi^-$	(8.3 $\pm$ 1.8) $\times 10^{-3}$	S=1.9	1345	DESIG=15
$K^+K^-\pi^+\pi^-\pi^0$	(3.4 $\pm$ 0.6) %		1304	DESIG=60
$K^0K^-\pi^+\pi^-\pi^+ + \text{c.c.}$	(5.4 $\pm$ 1.5) %		1302	DESIG=62
$K^+K^-2(\pi^+\pi^-)$	(8.4 $\pm$ 2.4) $\times 10^{-3}$		1254	DESIG=55
$2(K^+K^-)$	(1.4 $\pm$ 0.4) $\times 10^{-3}$	S=1.4	1056	DESIG=27
$\pi^+\pi^-\pi^0$	< 4 $\times 10^{-4}$	CL=90%	1476	DESIG=81
$\pi^+\pi^-\pi^0\pi^0$	(4.6 $\pm$ 1.0) %		1461	DESIG=63
$2(\pi^+\pi^-)$	(9.6 $\pm$ 1.5) $\times 10^{-3}$	S=1.4	1459	DESIG=11
$2(\pi^+\pi^-\pi^0)$	(15.9 $\pm$ 2.0) %		1409	DESIG=64
$3(\pi^+\pi^-)$	(1.89 $\pm$ 0.34) %		1407	DESIG=56
$p\bar{p}$	(1.33 $\pm$ 0.11) $\times 10^{-3}$	S=1.1	1160	DESIG=12
$p\bar{p}\pi^0$	(3.4 $\pm$ 1.3) $\times 10^{-3}$		1101	DESIG=65
$p\bar{p}\pi^+\pi^-$	(3.7 $\pm$ 0.5) $\times 10^{-3}$		1027	DESIG=13
$\Lambda\bar{\Lambda}$	(1.10 $\pm$ 0.28) $\times 10^{-3}$	S=1.5	991	DESIG=45
$K^+\bar{p}\Lambda + \text{c.c.}$	(2.5 $\pm$ 0.4) $\times 10^{-3}$		773	DESIG=82
$\bar{\Lambda}(1520)\Lambda + \text{c.c.}$	(3.0 $\pm$ 1.3) $\times 10^{-3}$		694	DESIG=83
$\Sigma^+\bar{\Sigma}^-$	(2.6 $\pm$ 0.5) $\times 10^{-3}$		901	DESIG=66
$\Xi^-\bar{\Xi}^+$	(1.07 $\pm$ 0.24) $\times 10^{-3}$		692	DESIG=67

Radiative decays

$\gamma\gamma$	(1.66 $\pm$ 0.13) $\times 10^{-4}$	S=1.2	1492	NODE=M026;CLUMP=C DESIG=31
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**Charge conjugation (C), Parity (P),
Lepton Family number (LF) violating modes**

$\pi^+\pi^-$	P, CP	< 1.3 $\times 10^{-4}$	CL=90%	1485	DESIG=51
$\pi^0\pi^0$	P, CP	< 4 $\times 10^{-5}$	CL=90%	1486	DESIG=52
K^+K^-	P, CP	< 7 $\times 10^{-4}$	CL=90%	1408	DESIG=53
$K_S^0K_S^0$	P, CP	< 4 $\times 10^{-4}$	CL=90%	1407	DESIG=54

 $J/\psi(1S)$

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

Mass $m = 3096.900 \pm 0.006$ MeVFull width $\Gamma = 92.6 \pm 1.7$ keV (S = 1.1)

NODE=M070

NODE=M070M;DTYPE=M

NODE=M070W;DTYPE=G

$J/\psi(1S)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level (MeV/c)	p
hadrons	(87.7 $\pm$ 0.5) %	—	NODE=M070215;DESIG=3
virtual $\gamma \rightarrow$ hadrons	(13.46 $\pm$ 0.07) %	—	DESIG=4
$g g g$	(64.1 $\pm$ 1.0) %	—	DESIG=249
$\gamma g g$	(8.8 $\pm$ 1.1) %	—	DESIG=250
$e^+ e^-$	(5.971 $\pm$ 0.032) %	1548	DESIG=1
$e^+ e^- \gamma$	[a] (8.8 $\pm$ 1.4) $\times 10^{-3}$	1548	DESIG=5
$\mu^+ \mu^-$	(5.961 $\pm$ 0.033) %	1545	DESIG=2
$e^+ e^- e^+ e^-$	(5.5 $\pm$ 0.5) $\times 10^{-5}$	1548	DESIG=472
$e^+ e^- \mu^+ \mu^-$	(3.53 $\pm$ 0.26) $\times 10^{-5}$	1545	DESIG=473
$\mu^+ \mu^- \mu^+ \mu^-$	(1.11 $\pm$ 0.11) $\times 10^{-6}$	1530	DESIG=471
Decays involving hadronic resonances			
$\rho \pi$	(1.88 $\pm$ 0.12) %	S=2.6 1448	NODE=M070;CLUMP=A DESIG=20
$\rho^0 \pi^0$	(6.2 $\pm$ 0.6) $\times 10^{-3}$	1448	DESIG=21
$a_2(1320)^0 \pi^+ \pi^- \rightarrow$ $2(\pi^+ \pi^-) \pi^0$	(2.8 $\pm$ 0.6) $\times 10^{-3}$	—	DESIG=442
$a_2(1320)^+ \pi^- \pi^0 + \text{c.c.} \rightarrow$ $2(\pi^+ \pi^-) \pi^0$	(3.7 $\pm$ 0.7) $\times 10^{-3}$	—	DESIG=443
$a_2(1320) \rho$	(1.09 $\pm$ 0.22) %	1123	DESIG=43
$\eta \pi^+ \pi^-$	(3.8 $\pm$ 0.7) $\times 10^{-4}$	1487	DESIG=239
$\eta \rho$	(1.93 $\pm$ 0.23) $\times 10^{-4}$	1396	DESIG=22
$\eta \pi^+ \pi^- \pi^0$	(1.17 $\pm$ 0.20) %	1470	DESIG=420
$\eta \pi^+ \pi^- 3\pi^0$	(4.9 $\pm$ 1.0) $\times 10^{-3}$	1419	DESIG=422
$\eta \phi(2170) \rightarrow \eta \phi f_0(980) \rightarrow$ $\eta \phi \pi^+ \pi^-$	(1.2 $\pm$ 0.4) $\times 10^{-4}$	628	DESIG=287
$\eta \phi(2170) \rightarrow$ $\eta K^*(892)^0 \bar{K}^*(892)^0$	< 2.52 $\times 10^{-4}$	CL=90% —	DESIG=253
$\eta K^+ K^-$	(8.6 $\pm$ 3.0) $\times 10^{-4}$	1331	DESIG=455
$\eta K^\pm K_S^0 \pi^\mp$	[b] (2.2 $\pm$ 0.4) $\times 10^{-3}$	1278	DESIG=230
$\eta K^*(892)^0 \bar{K}^*(892)^0$	(1.15 $\pm$ 0.26) $\times 10^{-3}$	1003	DESIG=252
$\rho \eta'(958)$	(8.1 $\pm$ 0.8) $\times 10^{-5}$	S=1.6 1281	DESIG=23
$\rho^\pm \pi^\mp \pi^+ \pi^- 2\pi^0$	(2.8 $\pm$ 0.8) %	1364	DESIG=415
$\rho^+ \rho^- \pi^+ \pi^- \pi^0$	(6 $\pm$ 4) $\times 10^{-3}$	1186	DESIG=416
$\rho^+ K^+ K^- \pi^- + \text{c.c.} \rightarrow$ $K^+ K^- \pi^+ \pi^- \pi^0$	(3.5 $\pm$ 0.8) $\times 10^{-3}$	—	DESIG=444
$\rho^\mp K^\pm K_S^0$	(1.9 $\pm$ 0.4) $\times 10^{-3}$	1269	DESIG=342
$\rho(1450) \pi$	seen	1197	DESIG=310;OUR EST; $\rightarrow$ UNCHECKED $\leftarrow$
$\rho(1450) \pi \rightarrow \pi^+ \pi^- \pi^0$	(2.2 $\pm$ 1.1) $\times 10^{-4}$	—	DESIG=328
$\rho(1450)^\pm \pi^\mp \rightarrow K_S^0 K^\pm \pi^\mp$	(3.3 $\pm$ 0.6) $\times 10^{-4}$	—	DESIG=329
$\rho(1450)^0 \pi^0 \rightarrow K^+ K^- \pi^0$	(2.7 $\pm$ 0.6) $\times 10^{-4}$	—	DESIG=312
$\rho(1450) \eta'(958) \rightarrow$ $\pi^+ \pi^- \eta'(958)$	(3.3 $\pm$ 0.7) $\times 10^{-6}$	—	DESIG=345
$\rho(1700) \pi$	seen	1065	DESIG=325;OUR EST; $\rightarrow$ UNCHECKED $\leftarrow$
$\rho(1700) \pi \rightarrow \pi^+ \pi^- \pi^0$	(1.6 $\pm$ 1.1) $\times 10^{-4}$	—	DESIG=313
$\rho(2150) \pi$	seen	790	DESIG=326;OUR EST; $\rightarrow$ UNCHECKED $\leftarrow$
$\rho(2150) \pi \rightarrow \pi^+ \pi^- \pi^0$	(10 $\pm$ 40) $\times 10^{-6}$	—	DESIG=314
$\omega \pi^0$	(4.5 $\pm$ 0.5) $\times 10^{-4}$	S=1.4 1446	DESIG=32
$\omega \pi^0 \rightarrow \pi^+ \pi^- \pi^0$	(1.6 $\pm$ 0.7) $\times 10^{-5}$	—	DESIG=327
$\omega \pi^+ \pi^-$	(8.5 $\pm$ 1.0) $\times 10^{-3}$	S=1.3 1435	DESIG=24
$\omega \pi^0 \pi^0$	(3.4 $\pm$ 0.8) $\times 10^{-3}$	1436	DESIG=140
$\omega 3\pi^0$	(1.9 $\pm$ 0.6) $\times 10^{-3}$	1419	DESIG=421
$\omega f_2(1270)$	(4.3 $\pm$ 0.6) $\times 10^{-3}$	1142	DESIG=28
$\omega \eta$	(1.74 $\pm$ 0.20) $\times 10^{-3}$	S=1.6 1394	DESIG=30
$\omega \pi^+ \pi^- \pi^0$	(4.0 $\pm$ 0.7) $\times 10^{-3}$	1418	DESIG=211
$\omega \pi^0 \eta$	(3.4 $\pm$ 1.7) $\times 10^{-4}$	1363	DESIG=360
$\omega \pi^+ \pi^+ \pi^- \pi^-$	(8.5 $\pm$ 3.4) $\times 10^{-3}$	1392	DESIG=26
$\omega \pi^+ \pi^- 2\pi^0$	(3.3 $\pm$ 0.5) %	1394	DESIG=412
$\omega \eta' \pi^+ \pi^-$	(1.12 $\pm$ 0.13) $\times 10^{-3}$	1173	DESIG=385
$\omega \eta'(958)$	(1.89 $\pm$ 0.18) $\times 10^{-4}$	1279	DESIG=31

$\omega f_0(980)$	$(1.4 \pm 0.5) \times 10^{-4}$		1267	DESIG=150
$\omega f_0(1710) \rightarrow \omega K \bar{K}$	$(4.8 \pm 1.1) \times 10^{-4}$		878	DESIG=130
$\omega f_1(1420)$	$(6.8 \pm 2.4) \times 10^{-4}$		1060	DESIG=105
$\omega f'_2(1525)$	$< 2.2 \times 10^{-4}$	CL=90%	1007	DESIG=29
$\omega X(1835) \rightarrow \omega p \bar{p}$	$< 3.9 \times 10^{-6}$	CL=95%	—	DESIG=263
$\omega K^+ K^- \eta$	$(3.33 \pm 0.12) \times 10^{-4}$		996	DESIG=478
$\omega X(1835), X \rightarrow \eta' \pi^+ \pi^-$	$< 6.2 \times 10^{-5}$		—	DESIG=386
$\omega K^+ K^-$	$(1.52 \pm 0.31) \times 10^{-3}$		1268	DESIG=441
$\omega K^\pm K_S^0 \pi^\mp$	[b] $(3.4 \pm 0.5) \times 10^{-3}$		1210	DESIG=101
$\omega K \bar{K}$	$(1.9 \pm 0.4) \times 10^{-3}$		1268	DESIG=27
$\omega K^*(892) \bar{K} + \text{c.c.}$	$(6.1 \pm 0.9) \times 10^{-3}$		1097	DESIG=102
$\eta' K^{*\pm} K^\mp$	$(1.48 \pm 0.13) \times 10^{-3}$		—	DESIG=355
$\eta' K^* \bar{K}^0 + \text{c.c.}$	$(1.66 \pm 0.21) \times 10^{-3}$		1000	DESIG=357
$\eta' h_1(1415) \rightarrow \eta' K^* \bar{K} + \text{c.c.}$	$(2.16 \pm 0.31) \times 10^{-4}$		—	DESIG=353
$\eta' h_1(1415) \rightarrow \eta' K^{*\pm} K^\mp$	$(1.51 \pm 0.23) \times 10^{-4}$		—	DESIG=354
$\eta' h_1(1415) \rightarrow \gamma \eta' \eta'$	$(4.7 \pm \frac{1.1}{2.0}) \times 10^{-7}$		—	DESIG=430
$\bar{K} K^*(892) + \text{c.c.}$	seen		1373	DESIG=331; OUR EST; → UNCHECKED ←
$\bar{K} K^*(892) + \text{c.c.} \rightarrow K_S^0 K^\pm \pi^\mp$	$(4.8 \pm 0.5) \times 10^{-3}$		—	DESIG=332
$K^+ K^*(892)^- + \text{c.c.}$	$(6.0 \pm \frac{0.8}{1.0}) \times 10^{-3}$	S=2.9	1373	DESIG=121
$K^+ K^*(892)^- + \text{c.c.} \rightarrow K^+ K^- \pi^0$	$(2.69 \pm \frac{0.13}{0.20}) \times 10^{-3}$		—	DESIG=231
$K^+ K^*(892)^- + \text{c.c.} \rightarrow K^0 K^\pm \pi^\mp + \text{c.c.}$	$(3.0 \pm 0.4) \times 10^{-3}$		—	DESIG=232
$K^0 \bar{K}^*(892)^0 + \text{c.c.}$	$(4.2 \pm 0.4) \times 10^{-3}$		1373	DESIG=122
$K^0 \bar{K}^*(892)^0 + \text{c.c.} \rightarrow K^0 K^\pm \pi^\mp + \text{c.c.}$	$(3.2 \pm 0.4) \times 10^{-3}$		—	DESIG=233
$\bar{K}^*(892)^0 K^+ \pi^- + \text{c.c.}$	$(5.7 \pm 0.8) \times 10^{-3}$		1343	DESIG=214
$K^*(892)^\pm K^\mp \pi^0$	$(4.1 \pm 1.3) \times 10^{-3}$		1344	DESIG=343
$K^*(892)^+ K_S^0 \pi^- + \text{c.c.}$	$(2.0 \pm 0.5) \times 10^{-3}$		1342	DESIG=299
$K^*(892)^+ K_S^0 \pi^- + \text{c.c.} \rightarrow K_S^0 K_S^0 \pi^+ \pi^-$	$(6.7 \pm 2.2) \times 10^{-4}$		—	DESIG=300
$K^*(892)^0 K^- \pi^+ + \text{c.c.} \rightarrow K^+ K^- \pi^+ \pi^-$	$(3.8 \pm 0.5) \times 10^{-3}$		—	DESIG=445
$K^*(892)^0 K_S^0 \rightarrow \gamma K_S^0 K_S^0$	$(6.3 \pm \frac{0.6}{0.5}) \times 10^{-6}$		—	DESIG=376
$K^*(892)^0 K_S^0 \pi^0$	$(7 \pm 4) \times 10^{-4}$		1343	DESIG=344
$K^*(892)^\pm K^*(700)^\mp$	$(1.1 \pm \frac{1.0}{0.6}) \times 10^{-3}$		—	DESIG=257
$K^*(892)^0 \bar{K}^*(892)^0$	$(2.3 \pm 0.6) \times 10^{-4}$		1266	DESIG=46
$K^*(892)^\pm K^*(892)^\mp$	$(1.00 \pm \frac{0.22}{0.40}) \times 10^{-3}$		1266	DESIG=256
$K_1(1400)^\pm K^\mp$	$(3.8 \pm 1.4) \times 10^{-3}$		1170	DESIG=132
$K^*(1410) \bar{K} + \text{c.c.}$	seen		1165	DESIG=317; OUR EST; → UNCHECKED ←
$K^*(1410) \bar{K} + \text{c.c.} \rightarrow K^\pm K^\mp \pi^0$	$(7 \pm 4) \times 10^{-5}$		—	DESIG=330
$K^*(1410) \bar{K} + \text{c.c.} \rightarrow K_S^0 K^\pm \pi^\mp$	$(8 \pm 5) \times 10^{-5}$		—	DESIG=318
$K_2^*(1430) \bar{K} + \text{c.c.}$	seen		1158	DESIG=319; OUR EST; → UNCHECKED ←
$K_2^*(1430) \bar{K} + \text{c.c.} \rightarrow K^\pm K^\mp \pi^0$	$(1.0 \pm 0.5) \times 10^{-4}$		—	DESIG=321
$K_2^*(1430) \bar{K} + \text{c.c.} \rightarrow K_S^0 K^\pm \pi^\mp$	$(3.8 \pm 1.0) \times 10^{-4}$		—	DESIG=320
$\bar{K}_2^*(1430) K + \text{c.c.}$	$< 4.0 \times 10^{-3}$	CL=90%	1158	DESIG=45
$K_2^*(1430)^+ K^- + \text{c.c.} \rightarrow K^+ K^- \pi^0$	$(2.69 \pm \frac{0.25}{0.19}) \times 10^{-4}$		—	DESIG=381
$K_2^*(1430)^0 K^- \pi^+ + \text{c.c.} \rightarrow K^+ K^- \pi^+ \pi^-$	$(2.6 \pm 0.9) \times 10^{-3}$		—	DESIG=446

$K_2^*(1430)^+ K_S^0 \pi^- + \text{c.c.}$	$(3.6 \pm 1.8) \times 10^{-3}$		1116	DESIG=301
$\bar{K}_2^*(1430)^0 K^*(892)^0 + \text{c.c.}$	$(4.67 \pm 0.29) \times 10^{-3}$		1011	DESIG=48
$K_2^*(1430)^- K^*(892)^+ + \text{c.c.}$	$(3.4 \pm 2.9) \times 10^{-3}$		1011	DESIG=303
$K_2^*(1430)^- K^*(892)^+ +$ c.c. $\rightarrow$ $K^*(892)^+ K_S^0 \pi^- + \text{c.c.}$	$(4 \pm 4) \times 10^{-4}$		—	DESIG=304
$K_2^*(1430)^0 \bar{K}_2^*(1430)^0$	< 2.9	$\times 10^{-3}$	CL=90% 601	DESIG=47
$\bar{K}_2(1770)^0 K^*(892)^0 + \text{c.c.} \rightarrow$ $K^*(892)^0 K^- \pi^+ + \text{c.c.}$	$(6.9 \pm 0.9) \times 10^{-4}$		—	DESIG=235
$K_2^*(1980)^+ K^- + \text{c.c.} \rightarrow$ $K^+ K^- \pi^0$	$(1.10 \pm_{-0.14}^{0.60}) \times 10^{-5}$		—	DESIG=382
$K_4^*(2045)^+ K^- + \text{c.c.} \rightarrow$ $K^+ K^- \pi^0$	$(6.2 \pm_{-1.6}^{2.9}) \times 10^{-6}$		—	DESIG=383
$K_1(1270)^\pm K^\mp$	< 3.0	$\times 10^{-3}$	CL=90% 1240	DESIG=131
$K_1(1270) K_S^0 \rightarrow \gamma K_S^0 K_S^0$	$(8.5 \pm 2.5) \times 10^{-7}$		—	DESIG=377
$a_2(1320)^\pm \pi^\mp$	$[b] < 4.3$	$\times 10^{-3}$	CL=90% 1263	DESIG=42
$\phi \pi^0$	$3 \times 10^{-6} \text{ or } 1 \times 10^{-7}$		1377	DESIG=33;OUR EVAL; $\rightarrow$ UNCHECKED $\leftarrow$
$\phi \pi^+ \pi^-$	$(9.4 \pm 1.5) \times 10^{-4}$	S=1.7	1365	DESIG=34
$\phi \pi^0 \pi^0$	$(4.9 \pm 1.0) \times 10^{-4}$		1366	DESIG=76
$\phi 2(\pi^+ \pi^-)$	$(1.60 \pm 0.32) \times 10^{-3}$		1318	DESIG=35
$\phi \eta$	$(7.4 \pm 0.6) \times 10^{-4}$	S=1.2	1320	DESIG=37
$\phi \eta'(958)$	$(4.6 \pm 0.5) \times 10^{-4}$	S=2.2	1192	DESIG=38
$\phi \eta \eta'$	$(2.32 \pm 0.17) \times 10^{-4}$		885	DESIG=387
$\phi f_0(980)$	$(3.2 \pm 0.9) \times 10^{-4}$	S=1.9	1178	DESIG=41
$\phi f_0(980) \rightarrow \phi \pi^+ \pi^-$	$(2.58 \pm 0.34) \times 10^{-4}$		—	DESIG=236
$\phi f_0(980) \rightarrow \phi \pi^0 \pi^0$	$(1.7 \pm 0.5) \times 10^{-4}$		—	DESIG=237
$\phi \pi^0 f_0(980) \rightarrow \phi \pi^0 \pi^+ \pi^-$	$(4.5 \pm 1.0) \times 10^{-6}$		—	DESIG=278
$\phi \pi^0 f_0(980) \rightarrow \phi \pi^0 p^0 \pi^0$	$(1.7 \pm 0.6) \times 10^{-6}$		1045	DESIG=279
$\phi f_0(980) \eta \rightarrow \eta \phi \pi^+ \pi^-$	$(3.2 \pm 1.0) \times 10^{-4}$		—	DESIG=229
$\phi(1680)^0 \pi^0 \rightarrow \phi \eta \pi^0$	$(6.7 \pm 1.1) \times 10^{-6}$		—	DESIG=480
$X(2000)^0 \pi^0 \rightarrow \phi \eta \pi^0$	$(1.70 \pm_{-0.23}^{0.50}) \times 10^{-6}$		—	DESIG=481
$h_1(1900)^0 \pi^0 \rightarrow \phi \eta \pi^0$	$(8.4 \pm_{-1.3}^{1.4}) \times 10^{-6}$		—	DESIG=482
$\phi f_2(1270)$	$(3.2 \pm 0.6) \times 10^{-4}$		1036	DESIG=39
$\phi f_1(1285)$	$(2.6 \pm 0.5) \times 10^{-4}$		1033	DESIG=106
$\phi f_1(1285) \rightarrow$ $\phi \pi^0 f_0(980) \rightarrow$ $\phi \pi^0 \pi^+ \pi^-$	$(9.4 \pm 2.8) \times 10^{-7}$		952	DESIG=280
$\phi f_1(1285) \rightarrow$ $\phi \pi^0 f_0(980) \rightarrow \phi 3\pi^0$	$(2.1 \pm 2.2) \times 10^{-7}$		955	DESIG=281
$\phi \eta(1405) \rightarrow \phi \eta \pi^+ \pi^-$	$(2.0 \pm 1.0) \times 10^{-5}$		946	DESIG=128
$\phi f_2'(1525)$	$(8 \pm 4) \times 10^{-4}$	S=2.7	877	DESIG=40
$\phi X(1835) \rightarrow \phi p \bar{p}$	< 2.1	$\times 10^{-7}$	CL=90% —	DESIG=291
$\phi X(1835) \rightarrow \phi \eta \pi^+ \pi^-$	< 2.8	$\times 10^{-4}$	CL=90% 578	DESIG=288
$\phi X(1870) \rightarrow \phi \eta \pi^+ \pi^-$	< 6.13	$\times 10^{-5}$	CL=90% —	DESIG=289
$\phi K \bar{K}$	$(1.77 \pm 0.16) \times 10^{-3}$	S=1.3	1179	DESIG=36
$\phi f_0(1710) \rightarrow \phi K \bar{K}$	$(3.6 \pm 0.6) \times 10^{-4}$		875	DESIG=129
$\phi K^+ K^-$	$(8.2 \pm 1.1) \times 10^{-4}$		1179	DESIG=295
$\phi K_S^0 K_S^0$	$(5.8 \pm 1.5) \times 10^{-4}$		1176	DESIG=305
$\phi K^\pm K_S^0 \pi^\mp$	$[b] (7.2 \pm 0.8) \times 10^{-4}$		1114	DESIG=103
$\phi K^*(892) \bar{K} + \text{c.c.}$	$(2.18 \pm 0.23) \times 10^{-3}$		969	DESIG=104
$b_1(1235)^\pm \pi^\mp$	$[b] (3.0 \pm 0.5) \times 10^{-3}$		1300	DESIG=49
$b_1(1235)^0 \pi^0$	$(2.3 \pm 0.6) \times 10^{-3}$		1300	DESIG=160
$f_2'(1525) K^+ K^-$	$(1.04 \pm 0.35) \times 10^{-3}$		897	DESIG=308
$\Delta(1232)^+ \bar{p}$	< 1	$\times 10^{-4}$	CL=90% 1100	DESIG=112
$\Delta(1232)^{++} \bar{p} \pi^-$	$(1.6 \pm 0.5) \times 10^{-3}$		1030	DESIG=70

$\Delta(1232)^{++} \bar{\Delta}(1232)^{--}$	$(1.10 \pm 0.29) \times 10^{-3}$	938	DESIG=66
$\Sigma(1385)^0 p K^-$	$(5.1 \pm 3.2) \times 10^{-4}$	646	DESIG=74
$\Sigma(1385)^0 \bar{\Lambda} + \text{c.c.}$	$< 8.2 \times 10^{-6}$	CL=90% 911	DESIG=111
$\Sigma(1385)^- \bar{\Sigma}^+ + \text{c.c.}$	[b] $(3.0 \pm 0.7) \times 10^{-4}$	855	DESIG=68
$\Sigma(1385)^+ \bar{\Sigma}^- + \text{c.c.}$	$(3.3 \pm 0.8) \times 10^{-4}$	861	DESIG=450
$\Sigma(1385)^- \bar{\Sigma}(1385)^+ + \text{c.c.}$	[b] $(1.08 \pm 0.06) \times 10^{-3}$	697	DESIG=67
$\Sigma(1385)^+ \bar{\Sigma}(1385)^- + \text{c.c.}$	$(1.25 \pm 0.07) \times 10^{-3}$	697	DESIG=451
$\Sigma(1385)^0 \bar{\Sigma}(1385)^0$	$(1.07 \pm 0.08) \times 10^{-3}$	697	DESIG=309
$\Lambda(1520) \bar{\Lambda} + \text{c.c.} \rightarrow \gamma \Lambda \bar{\Lambda}$	$< 4.1 \times 10^{-6}$	CL=90% -	DESIG=260
$\bar{\Lambda}(1520) \Lambda + \text{c.c.}$	$< 1.80 \times 10^{-3}$	CL=90% 807	DESIG=364
$\Xi^0 \Xi^0$	$(1.17 \pm 0.04) \times 10^{-3}$	818	DESIG=248
$\Xi(1530)^- \Xi^+ + \text{c.c.}$	$(3.18 \pm 0.08) \times 10^{-4}$	600	DESIG=107
$\Xi(1530)^0 \Xi^0$	$(3.2 \pm 1.4) \times 10^{-4}$	608	DESIG=108
$\Theta(1540) \bar{\Theta}(1540) \rightarrow K_S^0 p K^- \bar{n} + \text{c.c.}$	[c] $< 1.1 \times 10^{-5}$	CL=90% -	DESIG=205
$\Theta(1540) K^- \bar{n} \rightarrow K_S^0 p K^- \bar{n}$	[c] $< 2.1 \times 10^{-5}$	CL=90% -	DESIG=206
$\Theta(1540) K_S^0 \bar{p} \rightarrow K_S^0 \bar{p} K^+ n$	[c] $< 1.6 \times 10^{-5}$	CL=90% -	DESIG=207
$\bar{\Theta}(1540) K^+ n \rightarrow K_S^0 \bar{p} K^+ n$	[c] $< 5.6 \times 10^{-5}$	CL=90% -	DESIG=208
$\bar{\Theta}(1540) K_S^0 p \rightarrow K_S^0 p K^- \bar{n}$	[c] $< 1.1 \times 10^{-5}$	CL=90% -	DESIG=209

Decays into stable hadrons

$2(\pi^+ \pi^-) \pi^0$	$(4.2 \pm 0.4) \%$	S=2.1 1496	DESIG=9
$3(\pi^+ \pi^-) \pi^0$	$(2.9 \pm 0.6) \%$	1433	DESIG=11
$\pi^+ \pi^- 3\pi^0$	$(1.9 \pm 0.9) \%$	1497	DESIG=358
$\rho^\pm \pi^\mp \pi^0 \pi^0$	$(1.41 \pm 0.22) \%$	1421	DESIG=362
$\rho^+ \rho^- \pi^0$	$(6.0 \pm 1.1) \times 10^{-3}$	1298	DESIG=363
$\pi^+ \pi^- 4\pi^0$	$(6.5 \pm 1.3) \times 10^{-3}$	1470	DESIG=419
$\pi^+ \pi^- \pi^0$	$(2.00 \pm 0.07) \%$	S=2.0 1533	DESIG=7
$2(\pi^+ \pi^- \pi^0)$	$(1.61 \pm 0.20) \%$	1468	DESIG=210
$\pi^+ \pi^- \pi^0 K^+ K^-$	$(1.52 \pm 0.27) \%$	S=1.4 1368	DESIG=18
$\pi^+ \pi^-$	$(1.47 \pm 0.14) \times 10^{-4}$	1542	DESIG=6
$2(\pi^+ \pi^-)$	$(3.20 \pm 0.25) \times 10^{-3}$	S=1.2 1517	DESIG=8
$3(\pi^+ \pi^-)$	$(4.3 \pm 0.4) \times 10^{-3}$	1466	DESIG=10
$2(\pi^+ \pi^-) 3\pi^0$	$(6.2 \pm 0.9) \%$	1435	DESIG=411
$4(\pi^+ \pi^-) \pi^0$	$(9.0 \pm 3.0) \times 10^{-3}$	1345	DESIG=12
$2(\pi^+ \pi^-) \eta$	$(2.29 \pm 0.28) \times 10^{-3}$	1446	DESIG=201
$3(\pi^+ \pi^-) \eta$	$(7.2 \pm 1.5) \times 10^{-4}$	1379	DESIG=202
$2(\pi^+ \pi^- \pi^0) \eta$	$(1.6 \pm 0.5) \times 10^{-3}$	1381	DESIG=418
$\pi^+ \pi^- \pi^0 \pi^0 \eta$	$(2.4 \pm 0.5) \times 10^{-3}$	1448	DESIG=359
$\rho^\pm \pi^\mp \pi^0 \eta$	$(1.9 \pm 0.8) \times 10^{-3}$	1326	DESIG=361
$K^+ K^-$	$(3.06 \pm 0.05) \times 10^{-4}$	1468	DESIG=13
$K_S^0 K_L^0$	$(1.95 \pm 0.11) \times 10^{-4}$	S=2.4 1466	DESIG=75
$K_S^0 K_S^0$	$< 1.4 \times 10^{-8}$	CL=95% 1466	DESIG=14
$K \bar{K} \pi$	$(6.1 \pm 1.0) \times 10^{-3}$	1442	DESIG=15
$K^+ K^- \pi^0$	$(2.88 \pm 0.12) \times 10^{-3}$	1442	DESIG=334
$K_S^0 K^\pm \pi^\mp$	$(5.3 \pm 0.5) \times 10^{-3}$	1440	DESIG=335
$K_S^0 K_L^0 \pi^0$	$(2.06 \pm 0.26) \times 10^{-3}$	1440	DESIG=336
$K^*(892)^0 \bar{K}^0 + \text{c.c.} \rightarrow K_S^0 K_L^0 \pi^0$	$(1.21 \pm 0.18) \times 10^{-3}$	-	DESIG=339
$K_2^*(1430)^0 \bar{K}^0 + \text{c.c.} \rightarrow K_S^0 K_L^0 \pi^0$	$(4.3 \pm 1.3) \times 10^{-4}$	-	DESIG=338
$K^+ K^- \pi^+ \pi^-$	$(7.0 \pm 1.0) \times 10^{-3}$	1407	DESIG=16
$K^+ K^- \pi^0 \pi^0$	$(2.13 \pm 0.22) \times 10^{-3}$	1410	DESIG=234
$K^+ K^- \pi^0 \pi^0 \pi^0$	$(1.61 \pm 0.29) \times 10^{-3}$	1371	DESIG=452
$K_S^0 K^\pm \pi^\mp \pi^0 \pi^0$	$(5.3 \pm 0.7) \times 10^{-3}$	1369	DESIG=453
$K_S^0 K^\pm \pi^\mp \pi^+ \pi^-$	$(6.3 \pm 0.4) \times 10^{-3}$	1366	DESIG=454
$K_S^0 K^\pm \rho(770)^\pm \pi^0$	$(2.9 \pm 0.8) \times 10^{-3}$	-	DESIG=463
$K_S^0 K_L^0 \pi^+ \pi^-$	$(3.8 \pm 0.6) \times 10^{-3}$	1406	DESIG=296
$K_S^0 K_L^0 \pi^0 \pi^0$	$(1.9 \pm 0.4) \times 10^{-3}$	1408	DESIG=337

NODE=M070;CLUMP=B

$K_S^0 K_L^0 \eta$	$(1.45 \pm 0.33) \times 10^{-3}$		1328	DESIG=340
$K_S^0 K_S^0 \pi^+ \pi^-$	$(1.68 \pm 0.19) \times 10^{-3}$		1406	DESIG=297
$K^\mp K_S^0 \pi^\pm \pi^0$	$(5.7 \pm 0.5) \times 10^{-3}$		1408	DESIG=341
$K_S^0 K^\pm \pi^\mp \rho(770)^0$	$(3.1 \pm 0.5) \times 10^{-3}$		—	DESIG=456
$K^+ K^- 2(\pi^+ \pi^-)$	$(3.1 \pm 1.3) \times 10^{-3}$		1320	DESIG=17
$K^+ K^- \pi^+ \pi^- \eta$	$(4.7 \pm 0.7) \times 10^{-3}$		1221	DESIG=238
$2(K^+ K^-)$	$(7.2 \pm 0.8) \times 10^{-4}$		1131	DESIG=19
$K^+ K^- K_S^0 K_S^0$	$(4.2 \pm 0.7) \times 10^{-4}$		1127	DESIG=298
$K_S^0 K^*(892)^0 \pi^+ \pi^-$	$(1.7 \pm 0.6) \times 10^{-3}$		1304	DESIG=457
$K_S^0 K^*(892)^0 \pi^0 \pi^0$	$(1.01 \pm 0.18) \times 10^{-3}$		1306	DESIG=462
$K^\mp K^*(892)^\pm \pi^+ \pi^-$	$(3.4 \pm 1.2) \times 10^{-3}$		1305	DESIG=458
$K^*(892)^\pm K^*(892)^0 \pi^\mp$	$(4.8 \pm 1.0) \times 10^{-3}$		1213	DESIG=459
$K^\mp K^*(892)^\pm \pi^0 \pi^0$	$(1.57 \pm 0.32) \times 10^{-3}$		1308	DESIG=461
$K^*(892)^+ K^*(892)^- \pi^0$	$(1.12 \pm 0.23) \%$		1214	DESIG=460
$p\bar{p}$	$(2.120 \pm 0.029) \times 10^{-3}$		1232	DESIG=50
$p\bar{p}\pi^0$	$(1.19 \pm 0.08) \times 10^{-3}$	S=1.1	1176	DESIG=52
$p\bar{p}\pi^+ \pi^-$	$(6.0 \pm 0.5) \times 10^{-3}$	S=1.3	1107	DESIG=54
$p\bar{p}\pi^+ \pi^- \pi^0$	[d] $(2.3 \pm 0.9) \times 10^{-3}$	S=1.9	1033	DESIG=55
$p\bar{p}\eta$	$(2.00 \pm 0.12) \times 10^{-3}$		948	DESIG=56
$p\bar{p}\rho$	< 3.1 $\times 10^{-4}$	CL=90%	774	DESIG=57
$p\bar{p}\omega$	$(9.8 \pm 1.0) \times 10^{-4}$	S=1.3	768	DESIG=58
$p\bar{p}\eta'(958)$	$(1.29 \pm 0.14) \times 10^{-4}$	S=2.0	596	DESIG=59
$p\bar{p}a_0(980) \rightarrow p\bar{p}\pi^0 \eta$	$(6.8 \pm 1.8) \times 10^{-5}$		—	DESIG=276
$p\bar{p}\phi$	$(5.19 \pm 0.33) \times 10^{-5}$		527	DESIG=127
$p\bar{n}\pi^-$	$(2.12 \pm 0.09) \times 10^{-3}$		1174	DESIG=53
$n\bar{n}$	$(2.09 \pm 0.16) \times 10^{-3}$		1231	DESIG=64
$n\bar{n}\pi^+ \pi^-$	$(4 \pm 4) \times 10^{-3}$		1106	DESIG=65
$nN(1440)$	seen		978	DESIG=215;OUR EST;→ UNCHECKED ←
$nN(1520)$	seen		928	DESIG=216;OUR EST;→ UNCHECKED ←
$nN(1535)$	seen		917	DESIG=217;OUR EST;→ UNCHECKED ←
$\Lambda\bar{\Lambda}$	$(1.88 \pm 0.08) \times 10^{-3}$	S=2.6	1074	DESIG=60
$\Lambda\bar{\Lambda}\pi^0$	$(3.8 \pm 0.4) \times 10^{-5}$		998	DESIG=109
$\Lambda\bar{\Lambda}\pi^+ \pi^-$	$(4.3 \pm 1.0) \times 10^{-3}$		903	DESIG=261
$\Lambda\bar{\Lambda}\eta$	$(1.62 \pm 0.17) \times 10^{-4}$		672	DESIG=228
$\Lambda\bar{\Sigma}^- \pi^+ + \text{c.c.}$	[b] $(1.26 \pm 0.05) \times 10^{-3}$	S=1.2	950	DESIG=71
$\Lambda\bar{\Sigma}^+ \pi^- + \text{c.c.}$	$(1.21 \pm 0.07) \times 10^{-3}$	S=1.8	945	DESIG=449
$pK^- \bar{\Lambda} + \text{c.c.}$	$(8.6 \pm 1.1) \times 10^{-4}$		876	DESIG=72
$pK^- \bar{\Sigma}^0$	$(2.9 \pm 0.8) \times 10^{-4}$		819	DESIG=73
$pK_S^0 \bar{\Sigma}^- + \text{c.c.}$	$(2.73 \pm 0.05) \times 10^{-4}$		819	DESIG=474
$\bar{\Lambda}nK_S^0 + \text{c.c.}$	$(6.5 \pm 1.1) \times 10^{-4}$		872	DESIG=225
$\Lambda\bar{\Sigma} + \text{c.c.}$	$(2.83 \pm 0.23) \times 10^{-5}$		1034	DESIG=61
$\Sigma^+ \bar{\Sigma}^-$	$(1.07 \pm 0.04) \times 10^{-3}$		992	DESIG=247
$\Sigma^0 \bar{\Sigma}^0$	$(1.172 \pm 0.032) \times 10^{-3}$	S=1.4	988	DESIG=63
$\Sigma^+ \bar{\Sigma}^- \eta$	$(6.3 \pm 0.4) \times 10^{-5}$		498	DESIG=448
$\Xi^- \bar{\Xi}^+$	$(9.7 \pm 0.8) \times 10^{-4}$	S=1.4	807	DESIG=62

Radiative decays

$\gamma\eta_c(1S)$	$(1.41 \pm 0.14) \%$	S=1.3	111	NODE=M070;CLUMP=C DESIG=85
$\gamma\eta_c(1S) \rightarrow 3\gamma$	seen		—	DESIG=246;OUR EST;→ UNCHECKED ←
$\gamma\eta_c(1S) \rightarrow \gamma\eta\eta\eta'$	seen		—	DESIG=391;OUR EST;→ UNCHECKED ←
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
$\gamma\pi^0$	$(3.39 \pm 0.08) \times 10^{-5}$		1546	DESIG=82
$\gamma\pi^0 \pi^0$	$(1.15 \pm 0.05) \times 10^{-3}$		1543	DESIG=283
$\gamma 2\pi^+ 2\pi^-$	$(2.8 \pm 0.5) \times 10^{-3}$	S=1.9	1517	DESIG=95
$\gamma f_2(1270) f_2(1270)$	$(9.5 \pm 1.7) \times 10^{-4}$		878	DESIG=203
$\gamma f_2(1270) f_2(1270) (\text{non resonant})$	$(8.2 \pm 1.9) \times 10^{-4}$		—	DESIG=204
$\gamma\pi^+ \pi^- 2\pi^0$	$(8.3 \pm 3.1) \times 10^{-3}$		1518	DESIG=99

$\gamma K_S^0 K_S^0$	$(8.1 \pm 0.4) \times 10^{-4}$		1466	DESIG=378
$\gamma(K\bar{K}\pi) [J^{PC} = 0^{-+}]$	$(7 \pm 4) \times 10^{-4}$	S=2.1	1442	DESIG=176
$\gamma K^+ K^- \pi^+ \pi^-$	$(2.1 \pm 0.6) \times 10^{-3}$		1407	DESIG=143
$\gamma K^*(892) \bar{K}^*(892)$	$(4.0 \pm 1.3) \times 10^{-3}$		1266	DESIG=145
$\gamma \eta$	$(1.090 \pm 0.013) \times 10^{-3}$		1500	DESIG=83
$\gamma \eta \pi^0$	$(2.14 \pm 0.31) \times 10^{-5}$		1497	DESIG=292
$\gamma a_0(980)^0 \rightarrow \gamma \eta \pi^0$	$< 2.5 \times 10^{-6}$	CL=95%	—	DESIG=293
$\gamma a_2(1320)^0 \rightarrow \gamma \eta \pi^0$	$< 6.6 \times 10^{-6}$	CL=95%	—	DESIG=294
$\gamma \eta \pi \pi$	$(6.1 \pm 1.0) \times 10^{-3}$		1487	DESIG=96
$\gamma \eta_2(1870) \rightarrow \gamma \eta \pi^+ \pi^-$	$(6.2 \pm 2.4) \times 10^{-4}$		—	DESIG=142
$\gamma \eta'(958)$	$(5.28 \pm 0.06) \times 10^{-3}$	S=1.3	1400	DESIG=84
$\gamma \rho \rho$	$(4.5 \pm 0.8) \times 10^{-3}$		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
$\gamma \omega \omega$	$(1.61 \pm 0.33) \times 10^{-3}$		1336	DESIG=97
$\gamma \phi \phi$	$(4.0 \pm 1.2) \times 10^{-4}$	S=2.1	1166	DESIG=98
$\gamma \eta(1405/1475) \rightarrow \gamma K \bar{K} \pi$	$(2.8 \pm 0.6) \times 10^{-3}$	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
$\gamma \eta(1405/1475) \rightarrow \gamma \rho^0 \rho^0$	$(1.7 \pm 0.4) \times 10^{-3}$	S=1.3	1223	DESIG=124
$\gamma \eta(1405/1475) \rightarrow \gamma \gamma \phi$	$< 8.2 \times 10^{-5}$	CL=95%	—	DESIG=212
$\gamma \eta(1405) \rightarrow \gamma f_0(980) \pi^0 \rightarrow \gamma \pi^+ \pi^- \pi^0$	$(1.50 \pm 0.16) \times 10^{-5}$		—	DESIG=476
$\gamma \eta(1405) \rightarrow \gamma f_0(980) \pi^0 \rightarrow \gamma \pi^0 \pi^0 \pi^0$	$(7.1 \pm 1.1) \times 10^{-6}$		—	DESIG=477
$\gamma \eta(1405) \rightarrow \gamma \gamma \gamma$	$< 2.63 \times 10^{-6}$	CL=90%	—	DESIG=348
$\gamma \eta(1475) \rightarrow \gamma \gamma \gamma$	$< 1.86 \times 10^{-6}$	CL=90%	—	DESIG=349
$\gamma \eta(1760) \rightarrow \gamma \rho^0 \rho^0$	$(1.3 \pm 0.9) \times 10^{-4}$		1048	DESIG=125
$\gamma \eta(1760) \rightarrow \gamma \omega \omega$	$(1.98 \pm 0.33) \times 10^{-3}$		—	DESIG=224
$\gamma \eta(1760) \rightarrow \gamma \gamma \gamma$	$< 4.80 \times 10^{-6}$	CL=90%	—	DESIG=347
$\gamma \eta(2225)$	$(3.14 \pm 0.50) \times 10^{-4}$		752	DESIG=126
$\gamma f_2(1270)$	$(1.63 \pm 0.12) \times 10^{-3}$	S=1.3	1286	DESIG=86
$\gamma f_2(1270) \rightarrow \gamma K_S^0 K_S^0$	$(2.58 \pm 0.60) \times 10^{-5}$		—	DESIG=373
$\gamma f_1(1285)$	$(6.1 \pm 0.8) \times 10^{-4}$		1283	DESIG=88
$\gamma f_0(1370) \rightarrow \gamma K \bar{K}$	$(4.2 \pm 1.5) \times 10^{-4}$		—	DESIG=284
$\gamma f_0(1370) \rightarrow \gamma K_S^0 K_S^0$	$(1.1 \pm 0.4) \times 10^{-5}$		—	DESIG=368
$\gamma f_1(1420) \rightarrow \gamma K \bar{K} \pi$	$(7.9 \pm 1.3) \times 10^{-4}$		1220	DESIG=175
$\gamma f_0(1500) \rightarrow \gamma \pi \pi$	$(1.09 \pm 0.24) \times 10^{-4}$		1183	DESIG=172
$\gamma f_0(1500) \rightarrow \gamma \eta \eta$	$(1.7 \pm 0.6) \times 10^{-5}$		—	DESIG=265
$\gamma f_0(1500) \rightarrow \gamma K_S^0 K_S^0$	$(1.59 \pm 0.24) \times 10^{-5}$		—	DESIG=369
$\gamma f_1(1510) \rightarrow \gamma \eta \pi^+ \pi^-$	$(4.5 \pm 1.2) \times 10^{-4}$		—	DESIG=141
$\gamma f_2'(1525)$	$(5.7 \pm 0.8) \times 10^{-4}$	S=1.5	1177	DESIG=87
$\gamma f_2'(1525) \rightarrow \gamma K_S^0 K_S^0$	$(8.0 \pm 0.7) \times 10^{-5}$		—	DESIG=374
$\gamma f_2'(1525) \rightarrow \gamma \eta \eta$	$(3.4 \pm 1.4) \times 10^{-5}$		—	DESIG=268
$\gamma f_2(1640) \rightarrow \gamma \omega \omega$	$(2.8 \pm 1.8) \times 10^{-4}$		—	DESIG=222
$\gamma f_0(1710) \rightarrow \gamma \pi \pi$	$(3.8 \pm 0.5) \times 10^{-4}$		—	DESIG=135
$\gamma f_0(1710) \rightarrow \gamma K \bar{K}$	$(9.5 \pm 1.0) \times 10^{-4}$	S=1.5	1075	DESIG=91
$\gamma f_0(1710) \rightarrow \gamma \omega \omega$	$(3.1 \pm 1.0) \times 10^{-4}$		—	DESIG=221
$\gamma f_0(1710) \rightarrow \gamma \eta \eta$	$(2.4 \pm 1.2) \times 10^{-4}$		—	DESIG=266
$\gamma f_0(1710) \rightarrow \gamma \omega \phi$	$(2.5 \pm 0.6) \times 10^{-4}$		—	DESIG=262
$\gamma f_0(1770) \rightarrow \gamma K_S^0 K_S^0$	$(1.11 \pm 0.20) \times 10^{-5}$		—	DESIG=370
$\gamma f_2(1810) \rightarrow \gamma \eta \eta$	$(5.4 \pm 3.5) \times 10^{-5}$		—	DESIG=269

$\gamma\eta_1(1855) \rightarrow \gamma\eta\eta'$	$(2.7 \pm_{-0.5}^{+0.4}) \times 10^{-6}$	—	DESIG=447
$\gamma f_2(1910) \rightarrow \gamma\omega\omega$	$(2.0 \pm 1.4) \times 10^{-4}$	—	DESIG=223
$\gamma f_2(1950) \rightarrow$	$(7.0 \pm 2.2) \times 10^{-4}$	—	DESIG=144
$\gamma K^*(892) \bar{K}^*(892)$			
$\gamma f_0(2020) \rightarrow \gamma\eta'\eta'$	$(2.63 \pm_{-0.50}^{+0.32}) \times 10^{-4}$	—	DESIG=426
$\gamma f_4(2050)$	$(2.7 \pm 0.7) \times 10^{-3}$	891	DESIG=100
$\gamma f_0(2100) \rightarrow \gamma\eta\eta$	$(1.13 \pm_{-0.30}^{+0.60}) \times 10^{-4}$	—	DESIG=267
$\gamma f_0(2100) \rightarrow \gamma\pi\pi$	$(6.2 \pm 1.0) \times 10^{-4}$	—	DESIG=286
$\gamma f_0(2200)$	seen	776	DESIG=123;OUR EST;→ UNCHECKED ←
$\gamma f_0(2200) \rightarrow \gamma K \bar{K}$	$(5.9 \pm 1.3) \times 10^{-4}$	—	DESIG=285
$\gamma f_0(2200) \rightarrow \gamma K_S^0 K_S^0$	$(2.72 \pm_{-0.50}^{+0.19}) \times 10^{-4}$	—	DESIG=371
$\gamma f_J(2220)$	seen	745	DESIG=92;OUR EST;→ UNCHECKED ←
$\gamma f_J(2220) \rightarrow \gamma\pi\pi$	$< 3.9 \times 10^{-5}$	CL=90% —	DESIG=136
$\gamma f_J(2220) \rightarrow \gamma K \bar{K}$	$< 4.1 \times 10^{-5}$	CL=90% —	DESIG=137
$\gamma f_J(2220) \rightarrow \gamma p \bar{p}$	$(1.5 \pm 0.8) \times 10^{-5}$	—	DESIG=138
$\gamma f_0(2330) \rightarrow \gamma K_S^0 K_S^0$	$(4.9 \pm 0.7) \times 10^{-5}$	—	DESIG=372
$\gamma f_0(2330) \rightarrow \gamma\eta'\eta'$	$(6.1 \pm_{-1.8}^{+4.0}) \times 10^{-6}$	—	DESIG=427
$\gamma f_2(2340) \rightarrow \gamma\eta\eta$	$(5.6 \pm_{-2.2}^{+2.4}) \times 10^{-5}$	—	DESIG=270
$\gamma f_2(2340) \rightarrow \gamma K_S^0 K_S^0$	$(5.5 \pm_{-1.5}^{+4.0}) \times 10^{-5}$	—	DESIG=375
$\gamma f_2(2340) \rightarrow \gamma\eta'\eta'$	$(8.7 \pm_{-1.8}^{+0.9}) \times 10^{-6}$	—	DESIG=428
$\gamma f_0(2470) \rightarrow \gamma\eta'\eta'$	$(8.2 \pm_{-2.8}^{+4.0}) \times 10^{-7}$	—	DESIG=429
$\gamma X(1835) \rightarrow \gamma\pi^+\pi^-\eta'$	$(2.7 \pm_{-0.8}^{+0.6}) \times 10^{-4}$	S=1.6 1006	DESIG=213
$\gamma X(1835) \rightarrow \gamma p \bar{p}$	$(7.7 \pm_{-0.9}^{+1.5}) \times 10^{-5}$	—	DESIG=254
$\gamma X(1835) \rightarrow \gamma K_S^0 K_S^0 \eta$	$(3.3 \pm_{-1.3}^{+2.0}) \times 10^{-5}$	—	DESIG=282
$\gamma X(1835) \rightarrow \gamma\gamma\gamma$	$< 3.56 \times 10^{-6}$	CL=90% —	DESIG=350
$\gamma X(1835) \rightarrow \gamma 3(\pi^+\pi^-)$	$(2.4 \pm_{-0.8}^{+0.7}) \times 10^{-5}$	—	DESIG=264
$\gamma\eta(2370) \rightarrow \gamma K^+ K^- \eta'$	$(1.8 \pm 0.7) \times 10^{-5}$	—	DESIG=388
$\gamma\eta(2370) \rightarrow \gamma K_S^0 K_S^0 \eta'$	$(1.2 \pm 0.5) \times 10^{-5}$	—	DESIG=389
$\gamma\eta(2370) \rightarrow \gamma\eta\eta\eta'$	$< 9.2 \times 10^{-6}$	CL=90% —	DESIG=390
$\gamma D^0 + c.c.$	$< 9.1 \times 10^{-8}$	CL=90% 987	DESIG=479
$\gamma p \bar{p}$	$(3.8 \pm 1.0) \times 10^{-4}$	1232	DESIG=90
$\gamma p \bar{p} \pi^+ \pi^-$	$< 7.9 \times 10^{-4}$	CL=90% 1107	DESIG=93
$\gamma \Lambda \bar{\Lambda}$	$< 1.3 \times 10^{-4}$	CL=90% 1074	DESIG=200
$\gamma A^0 \rightarrow \gamma \text{invisible}$	$[e] < 1.7 \times 10^{-6}$	CL=90% —	DESIG=251
$\gamma A^0 \rightarrow \gamma\gamma\gamma$	$< 4.9 \times 10^{-7}$	CL=95% —	DESIG=469
$\gamma A^0 \rightarrow \gamma\mu^+\mu^-$	$[f] < 7.8 \times 10^{-7}$	CL=90% —	DESIG=259

Dalitz decays

$\pi^0 e^+ e^-$	$(7.6 \pm 1.4) \times 10^{-7}$	1546	DESIG=271	NODE=M070;CLUMP=G
$\eta e^+ e^-$	$(1.42 \pm 0.08) \times 10^{-5}$	1500	DESIG=272	
$\eta'(958) e^+ e^-$	$(6.59 \pm 0.18) \times 10^{-5}$	1400	DESIG=273	
$\eta(1405) e^+ e^- \rightarrow$	$(2.04 \pm 0.22) \times 10^{-7}$	—	DESIG=475	
$f_0(980) \pi^0 e^+ e^- \rightarrow$				
$\pi^+ \pi^- \pi^0 e^+ e^-$				
$X(1835) e^+ e^-, X \rightarrow$	$(3.58 \pm 0.25) \times 10^{-6}$	—	DESIG=423	
$\pi^+ \pi^- \eta'$				
$X(2120) e^+ e^-, X \rightarrow$	$(8.2 \pm 1.3) \times 10^{-7}$	—	DESIG=425	
$\pi^+ \pi^- \eta'$				
$\eta(2370) e^+ e^-, \eta \rightarrow \pi^+ \pi^- \eta'$	$(1.08 \pm 0.17) \times 10^{-6}$	—	DESIG=424	
$\eta U \rightarrow \eta e^+ e^-$	$[g] < 9.11 \times 10^{-7}$	CL=90% —	DESIG=352	
$\eta'(958) U \rightarrow \eta'(958) e^+ e^-$	$[g] < 2.0 \times 10^{-7}$	CL=90% —	DESIG=366	
$\phi e^+ e^-$	$< 1.2 \times 10^{-7}$	CL=90% 1381	DESIG=384	

Weak decays

$D^- e^+ \nu_e + \text{c.c.}$	< 7.1	$\times 10^{-8}$	CL=90%	984	NODE=M070;CLUMP=E DESIG=218
$D^- \mu^+ \nu_\mu + \text{c.c.}$	< 5.6	$\times 10^{-7}$	CL=90%	980	DESIG=468
$\bar{D}^0 e^+ e^- + \text{c.c.}$	< 8.5	$\times 10^{-8}$	CL=90%	987	DESIG=219
$D_s^- e^+ \nu_e + \text{c.c.}$	< 1.3	$\times 10^{-6}$	CL=90%	923	DESIG=220
$D_s^{*-} e^+ \nu_e + \text{c.c.}$	< 1.8	$\times 10^{-6}$	CL=90%	828	DESIG=290
$D^- \pi^+ + \text{c.c.}$	< 7.0	$\times 10^{-8}$	CL=90%	977	DESIG=241
$D^- \rho^+ + \text{c.c.}$	< 6.0	$\times 10^{-7}$	CL=90%	—	DESIG=464
$\bar{D}^0 \pi^0 + \text{c.c.}$	< 4.7	$\times 10^{-7}$	CL=90%	—	DESIG=465
$\bar{D}^0 \bar{K}^0 + \text{c.c.}$	< 1.7	$\times 10^{-4}$	CL=90%	898	DESIG=242
$\bar{D}^0 \bar{K}^{*0} + \text{c.c.}$	< 2.5	$\times 10^{-6}$	CL=90%	670	DESIG=275
$\bar{D}^0 \eta + \text{c.c.}$	< 6.8	$\times 10^{-7}$	CL=90%	—	DESIG=466
$\bar{D}^0 \rho^0 + \text{c.c.}$	< 5.2	$\times 10^{-7}$	CL=90%	—	DESIG=467
$D_s^- \pi^+ + \text{c.c.}$	< 1.3	$\times 10^{-4}$	CL=90%	915	DESIG=243
$D_s^- \rho^+ + \text{c.c.}$	< 1.3	$\times 10^{-5}$	CL=90%	663	DESIG=274

**Charge conjugation (C), Parity (P),
Lepton Family number (LF) violating modes**

$\gamma\gamma$	C	< 2.7	$\times 10^{-7}$	CL=90%	1548	NODE=M070;CLUMP=D DESIG=80
$\gamma\phi$	C	< 1.4	$\times 10^{-6}$	CL=90%	1381	DESIG=277
$e^\pm \mu^\mp$	LF	< 1.6	$\times 10^{-7}$	CL=90%	1547	DESIG=177
$e^\pm \tau^\mp$	LF	< 7.5	$\times 10^{-8}$	CL=90%	1039	DESIG=178
$\mu^\pm \tau^\mp$	LF	< 2.0	$\times 10^{-6}$	CL=90%	1035	DESIG=179
$\Lambda_c^+ e^- + \text{c.c.}$		< 6.9	$\times 10^{-8}$	CL=90%	704	DESIG=379

Other decays

invisible	< 7	$\times 10^{-4}$	CL=90%	—	NODE=M070;CLUMP=F DESIG=240
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 $\chi_{c0}(1P)$

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

Mass $m = 3414.71 \pm 0.30$ MeVFull width $\Gamma = 10.9 \pm 0.6$ MeV (S = 1.1)

NODE=M056
 NODE=M056M;DTYPE=M
 NODE=M056W;DTYPE=G

$\chi_{c0}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
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Hadronic decays

$2(\pi^+ \pi^-)$	(2.18 ± 0.11) %	S=1.2	1679	NODE=M056215;NODE=M056;CLUMP=A DESIG=3
$\rho^0 \pi^+ \pi^-$	(8.5 ± 2.7) $\times 10^{-3}$		1607	DESIG=9
$f_0(980) f_0(980)$	(6.7 ± 2.1) $\times 10^{-4}$		1391	DESIG=20
$\pi^+ \pi^- \pi^0 \pi^0$	(3.3 ± 0.4) %		1680	DESIG=61
$\rho^+ \pi^- \pi^0 + \text{c.c.}$	(2.9 ± 0.4) %		1607	DESIG=62
$4\pi^0$	(3.3 ± 0.4) $\times 10^{-3}$		1681	DESIG=70
$\pi^+ \pi^- K^+ K^-$	(1.81 ± 0.16) %	S=1.2	1580	DESIG=5
$K_0^*(1430)^0 \bar{K}_0^*(1430)^0 \rightarrow \pi^+ \pi^- K^+ K^-$	(9.9 $^{+4.0}_{-2.8}$) $\times 10^{-4}$		—	DESIG=31
$K_0^*(1430)^0 \bar{K}_2^*(1430)^0 + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-$	(8.0 $^{+2.0}_{-2.4}$) $\times 10^{-4}$		—	DESIG=32
$K_1(1270)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-$	(6.3 ± 1.9) $\times 10^{-3}$		—	DESIG=33
$K_1(1400)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-$	< 2.7 $\times 10^{-3}$	CL=90%	—	DESIG=34
$f_0(980) f_0(980)$	(1.6 $^{+1.0}_{-0.9}$) $\times 10^{-4}$		1391	DESIG=23
$f_0(980) f_0(2200)$	(8.0 $^{+2.0}_{-2.5}$) $\times 10^{-4}$		586	DESIG=24
$f_0(1370) f_0(1370)$	< 2.7 $\times 10^{-4}$	CL=90%	1019	DESIG=25
$f_0(1370) f_0(1500)$	< 1.7 $\times 10^{-4}$	CL=90%	907	DESIG=26
$f_0(1370) f_0(1710)$	(6.7 $^{+3.5}_{-2.3}$) $\times 10^{-4}$		709	DESIG=27
$f_0(1500) f_0(1370)$	< 1.3 $\times 10^{-4}$	CL=90%	907	DESIG=28
$f_0(1500) f_0(1500)$	< 5 $\times 10^{-5}$	CL=90%	774	DESIG=29
$f_0(1500) f_0(1710)$	< 7 $\times 10^{-5}$	CL=90%	515	DESIG=30

$K^+ K^- \pi^+ \pi^- \pi^0$	$(8.6 \pm 0.9) \times 10^{-3}$		1545	DESIG=75
$K_S^0 K^\pm \pi^\mp \pi^+ \pi^-$	$(4.2 \pm 0.4) \times 10^{-3}$		1543	DESIG=87
$K^+ K^- \pi^0 \pi^0$	$(5.6 \pm 0.9) \times 10^{-3}$		1582	DESIG=63
$K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.}$	$(2.50 \pm 0.33) \%$		1581	DESIG=65
$\rho^+ K^- K^0 + \text{c.c.}$	$(1.21 \pm 0.21) \%$		1458	DESIG=66
$K^*(892)^- K^+ \pi^0 \rightarrow$ $K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.}$	$(4.6 \pm 1.2) \times 10^{-3}$		—	DESIG=67
$K_S^0 K_S^0 \pi^+ \pi^-$	$(5.7 \pm 1.1) \times 10^{-3}$		1579	DESIG=41
$K^+ K^- \eta \pi^0$	$(3.0 \pm 0.7) \times 10^{-3}$		1468	DESIG=68
$3(\pi^+ \pi^-)$	$(1.96 \pm 0.22) \%$	S=3.4	1633	DESIG=4
$K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.}$	$(7.4 \pm 1.6) \times 10^{-3}$		1523	DESIG=10
$K^*(892)^0 K^*(892)^0$	$(1.7 \pm 0.6) \times 10^{-3}$		1456	DESIG=21
$\pi \pi$	$(8.6 \pm 0.4) \times 10^{-3}$	S=1.2	1702	DESIG=18
$\pi^0 \eta$	$< 1.8 \times 10^{-4}$		1661	DESIG=35
$\pi^0 \eta'$	$< 1.1 \times 10^{-3}$		1570	DESIG=36
$\pi^0 \eta_c$	$< 1.6 \times 10^{-3}$	CL=90%	383	DESIG=86
$\eta \eta$	$(3.02 \pm 0.25) \times 10^{-3}$	S=1.3	1617	DESIG=13
$\eta \eta'$	$(9.1 \pm 1.1) \times 10^{-5}$		1521	DESIG=37
$\eta' \eta'$	$(2.18 \pm 0.12) \times 10^{-3}$		1413	DESIG=46
$\omega \omega$	$(9.7 \pm 1.1) \times 10^{-4}$		1517	DESIG=22
$\omega \phi$	$(1.42 \pm 0.13) \times 10^{-4}$		1447	DESIG=76
$\omega K^+ K^-$	$(1.94 \pm 0.21) \times 10^{-3}$		1457	DESIG=88
$K^+ K^-$	$(6.07 \pm 0.33) \times 10^{-3}$	S=1.1	1634	DESIG=2
$K_S^0 K_S^0$	$(3.18 \pm 0.19) \times 10^{-3}$	S=1.1	1633	DESIG=15
$\pi^+ \pi^- \eta$	$< 2.0 \times 10^{-4}$	CL=90%	1651	DESIG=50
$\pi^+ \pi^- \eta'$	$< 4 \times 10^{-4}$	CL=90%	1560	DESIG=53
$\bar{K}^0 K^+ \pi^- + \text{c.c.}$	$< 9 \times 10^{-5}$	CL=90%	1610	DESIG=17
$K^+ K^- \pi^0$	$< 6 \times 10^{-5}$	CL=90%	1611	DESIG=47
$K^+ K^- \eta$	$< 2.3 \times 10^{-4}$	CL=90%	1512	DESIG=51
$K^+ K^- K_S^0 K_S^0$	$(1.4 \pm 0.5) \times 10^{-3}$		1331	DESIG=42
$K_S^0 K_S^0 K_S^0 K_S^0$	$(5.8 \pm 0.5) \times 10^{-4}$		1327	DESIG=94
$K^+ K^- K^+ K^-$	$(2.8 \pm 0.4) \times 10^{-3}$	S=1.5	1333	DESIG=14
$K^+ K^- \phi$	$(9.7 \pm 2.5) \times 10^{-4}$		1381	DESIG=44
$\bar{K}^0 K^+ \pi^- \phi + \text{c.c.}$	$(3.7 \pm 0.6) \times 10^{-3}$		1326	DESIG=91
$K^+ K^- \pi^0 \phi$	$(1.90 \pm 0.35) \times 10^{-3}$		1329	DESIG=92
$3(K^+ K^-)$	$(1.08 \pm 0.22) \times 10^{-5}$		693	DESIG=106
$\phi \pi^+ \pi^- \pi^0$	$(1.18 \pm 0.15) \times 10^{-3}$		1525	DESIG=89
$\phi \phi$	$(8.48 \pm 0.31) \times 10^{-4}$		1370	DESIG=16
$\phi \phi \eta$	$(8.4 \pm 1.0) \times 10^{-4}$		1100	DESIG=96
$p \bar{p}$	$(2.21 \pm 0.14) \times 10^{-4}$	S=1.6	1426	DESIG=11
$p \bar{p} \pi^0$	$(7.0 \pm 0.7) \times 10^{-4}$	S=1.3	1379	DESIG=48
$p \bar{p} \eta$	$(3.6 \pm 0.4) \times 10^{-4}$		1187	DESIG=52
$p \bar{p} \omega$	$(5.3 \pm 0.6) \times 10^{-4}$		1043	DESIG=69
$p \bar{p} \phi$	$(6.0 \pm 1.4) \times 10^{-5}$		876	DESIG=74
$p \bar{p} \pi^+ \pi^-$	$(2.1 \pm 0.7) \times 10^{-3}$	S=1.4	1320	DESIG=8
$p \bar{p} \pi^0 \pi^0$	$(1.04 \pm 0.28) \times 10^{-3}$		1324	DESIG=64
$p \bar{p} K^+ K^- (\text{non-resonant})$	$(1.22 \pm 0.26) \times 10^{-4}$		890	DESIG=71
$p \bar{p} K_S^0 K_S^0$	$< 8.8 \times 10^{-4}$	CL=90%	884	DESIG=40
$p \bar{p} K_S^0 K^- \pi^+ + \text{c.c.}$	$(2.6 \pm 0.4) \times 10^{-5}$		763	DESIG=107
$p \bar{n} \pi^-$	$(1.27 \pm 0.11) \times 10^{-3}$		1376	DESIG=43
$\bar{p} n \pi^+$	$(1.37 \pm 0.12) \times 10^{-3}$		1376	DESIG=82
$p \bar{n} \pi^- \pi^0$	$(2.35 \pm 0.21) \times 10^{-3}$		1321	DESIG=83
$\bar{p} n \pi^+ \pi^0$	$(2.22 \pm 0.19) \times 10^{-3}$		1321	DESIG=84
$\Lambda \bar{\Lambda}$	$(3.61 \pm 0.16) \times 10^{-4}$	S=1.1	1292	DESIG=19
$\Lambda \bar{\Lambda} \pi^+ \pi^-$	$(1.18 \pm 0.13) \times 10^{-3}$		1153	DESIG=38
$\Lambda \bar{\Lambda} \pi^+ \pi^- (\text{non-resonant})$	$< 5 \times 10^{-4}$	CL=90%	1153	DESIG=77
$\Sigma(1385)^+ \bar{\Lambda} \pi^- + \text{c.c.}$	$< 5 \times 10^{-4}$	CL=90%	1083	DESIG=78
$\Sigma(1385)^- \bar{\Lambda} \pi^+ + \text{c.c.}$	$< 5 \times 10^{-4}$	CL=90%	1083	DESIG=79

$\Lambda\bar{\Lambda}\eta$	$(2.3 \pm 0.4) \times 10^{-4}$		979	DESIG=102
$\Lambda\bar{\Lambda}\omega$	$(2.38 \pm 0.34) \times 10^{-4}$		781	DESIG=105
$\Lambda\bar{\Lambda}\phi$	$(3.0 \pm 1.3) \times 10^{-5}$		499	DESIG=104
$K^+\bar{p}\Lambda + \text{c.c.}$	$(1.25 \pm 0.12) \times 10^{-3}$	S=1.3	1132	DESIG=49
$nK_S^0\bar{\Lambda} + \text{c.c.}$	$(6.7 \pm 0.5) \times 10^{-4}$		1129	DESIG=101
$K^*(892)^+\bar{p}\Lambda + \text{c.c.}$	$(4.8 \pm 0.9) \times 10^{-4}$		845	DESIG=98
$K^+\bar{p}\Lambda(1520) + \text{c.c.}$	$(3.0 \pm 0.8) \times 10^{-4}$		859	DESIG=72
$\bar{p}\Lambda(1520)K_S^0\pi^+ + \text{c.c.}$	$(1.6 \pm 0.7) \times 10^{-5}$		722	DESIG=108
$\Lambda(1520)\bar{\Lambda}(1520)$	$(3.1 \pm 1.2) \times 10^{-4}$		780	DESIG=73
$\Sigma^0\bar{\Sigma}^0$	$(4.70 \pm 0.32) \times 10^{-4}$		1222	DESIG=58
$\Sigma^+\bar{p}K_S^0 + \text{c.c.}$	$(3.54 \pm 0.27) \times 10^{-4}$		1089	DESIG=97
$\Sigma^0\bar{p}K^+ + \text{c.c.}$	$(3.05 \pm 0.20) \times 10^{-4}$		1090	DESIG=100
$\Sigma^+\bar{\Sigma}^-$	$(4.7 \pm 0.8) \times 10^{-4}$	S=2.6	1225	DESIG=59
$\Sigma^+\bar{\Sigma}^-\eta$	$(1.27 \pm 0.24) \times 10^{-4}$		868	DESIG=109
$\Sigma^-\bar{\Sigma}^+$	$(5.2 \pm 0.5) \times 10^{-4}$		1217	DESIG=99
$\Sigma(1385)^+\bar{\Sigma}(1385)^-$	$(1.6 \pm 0.6) \times 10^{-4}$		1001	DESIG=80
$\Sigma(1385)^-\bar{\Sigma}(1385)^+$	$(2.3 \pm 0.7) \times 10^{-4}$		1001	DESIG=81
$K^-\Lambda\bar{\Xi}^+ + \text{c.c.}$	$(1.95 \pm 0.35) \times 10^{-4}$		873	DESIG=85
$\Xi^0\bar{\Xi}^0$	$(4.5 \pm 0.5) \times 10^{-4}$	S=1.7	1089	DESIG=60
$\Xi^-\bar{\Xi}^+$	$(4.48 \pm 0.20) \times 10^{-4}$		1081	DESIG=39
$\Omega^-\bar{\Omega}^+$	$(3.5 \pm 0.6) \times 10^{-5}$		343	DESIG=103
$\eta_c\pi^+\pi^-$	$< 7 \times 10^{-4}$	CL=90%	307	DESIG=90

Radiative decays

$\gamma J/\psi(1S)$	$(1.41 \pm 0.09) \%$	S=1.7	303	DESIG=6
$\gamma\rho^0$	$< 9 \times 10^{-6}$	CL=90%	1619	DESIG=55
$\gamma\omega$	$< 8 \times 10^{-6}$	CL=90%	1618	DESIG=56
$\gamma\phi$	$< 6 \times 10^{-6}$	CL=90%	1555	DESIG=57
$\gamma\gamma$	$(2.06 \pm 0.10) \times 10^{-4}$	S=1.1	1707	DESIG=7
$e^+e^- J/\psi(1S)$	$(1.34 \pm 0.30) \times 10^{-4}$		303	DESIG=93
$\mu^+\mu^- J/\psi(1S)$	$< 1.9 \times 10^{-5}$	CL=90%	226	DESIG=95

 $\chi_{c1}(1P)$

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

NODE=M055

$$\text{Mass } m = 3510.67 \pm 0.05 \text{ MeV } (S = 1.2)$$

NODE=M055M;DTYPE=M

$$\text{Full width } \Gamma = 0.84 \pm 0.04 \text{ MeV } (S = 1.1)$$

NODE=M055W;DTYPE=G

$\chi_{c1}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$e^+ e^-$	$(1.4^{+1.5}_{-1.0}) \times 10^{-7}$		1755	NODE=M055215;DESIG=110
Hadronic decays				
$3(\pi^+ \pi^-)$	$(1.04 \pm 0.16) \%$	S=4.6	1683	NODE=M055;CLUMP=A DESIG=6
$2(\pi^+ \pi^-)$	$(7.6 \pm 2.6) \times 10^{-3}$		1728	DESIG=5
$\pi^+ \pi^- \pi^0$	$(1.19 \pm 0.15) \%$		1729	DESIG=51
$\rho^+ \pi^- \pi^0 + \text{c.c.}$	$(1.45 \pm 0.24) \%$		1658	DESIG=52
$\rho^0 \pi^+ \pi^-$	$(3.9 \pm 3.5) \times 10^{-3}$		1658	DESIG=9
$4\pi^0$	$(5.4 \pm 0.8) \times 10^{-4}$		1729	DESIG=60
$\pi^+ \pi^- K^+ K^-$	$(4.5 \pm 1.0) \times 10^{-3}$		1632	DESIG=7
$K^+ K^- \pi^0 \pi^0$	$(1.12 \pm 0.27) \times 10^{-3}$		1634	DESIG=53
$K^+ K^- \pi^+ \pi^- \pi^0$	$(1.15 \pm 0.13) \%$		1598	DESIG=79
$K_S^0 K^\pm \pi^\mp \pi^+ \pi^-$	$(7.5 \pm 0.8) \times 10^{-3}$		1596	DESIG=84
$K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.}$	$(8.6 \pm 1.4) \times 10^{-3}$		1632	DESIG=55
$\rho^- K^+ \bar{K}^0 + \text{c.c.}$	$(5.0 \pm 1.2) \times 10^{-3}$		1514	DESIG=56
$K^*(892)^0 \bar{K}^0 \pi^0 \rightarrow$	$(2.3 \pm 0.6) \times 10^{-3}$		—	DESIG=57
$K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.}$				
$K^+ K^- \eta \pi^0$	$(1.12 \pm 0.34) \times 10^{-3}$		1523	DESIG=58
$\pi^+ \pi^- K_S^0 K_S^0$	$(6.9 \pm 2.9) \times 10^{-4}$		1630	DESIG=28
$K^+ K^- \eta$	$(3.2 \pm 1.0) \times 10^{-4}$		1566	DESIG=42
$\bar{K}^0 K^+ \pi^- + \text{c.c.}$	$(7.0 \pm 0.6) \times 10^{-3}$	S=1.1	1661	DESIG=17
$K^*(892)^0 \bar{K}^0 + \text{c.c.}$	$(1.03 \pm 0.15) \times 10^{-3}$		1602	DESIG=32
$K^*(892)^+ K^- + \text{c.c.}$	$(1.21 \pm 0.23) \times 10^{-3}$		1602	DESIG=33
$K_J^*(1430)^0 \bar{K}^0 + \text{c.c.} \rightarrow$	$< 8 \times 10^{-4}$	CL=90%	—	DESIG=34
$K_S^0 K^+ \pi^- + \text{c.c.}$				
$K_J^*(1430)^+ K^- + \text{c.c.} \rightarrow$	$< 2.1 \times 10^{-3}$	CL=90%	—	DESIG=35
$K_S^0 K^+ \pi^- + \text{c.c.}$				
$K^+ K^- \pi^0$	$(1.81 \pm 0.24) \times 10^{-3}$		1662	DESIG=38
$\eta \pi^+ \pi^-$	$(4.62 \pm 0.24) \times 10^{-3}$		1701	DESIG=31
$a_0(980)^+ \pi^- + \text{c.c.} \rightarrow \eta \pi^+ \pi^-$	$(3.2 \pm 0.4) \times 10^{-3}$	S=2.1	—	DESIG=36
$a_2(1320)^+ \pi^- + \text{c.c.} \rightarrow \eta \pi^+ \pi^-$	$(1.76 \pm 0.24) \times 10^{-4}$		—	DESIG=93
$a_2(1700)^+ \pi^- + \text{c.c.} \rightarrow \eta \pi^+ \pi^-$	$(4.6 \pm 0.7) \times 10^{-5}$		—	DESIG=96
$f_2(1270) \eta \rightarrow \eta \pi^+ \pi^-$	$(3.5 \pm 0.6) \times 10^{-4}$		—	DESIG=94
$f_4(2050) \eta \rightarrow \eta \pi^+ \pi^-$	$(2.5 \pm 0.9) \times 10^{-5}$		—	DESIG=95
$\pi_1(1400)^+ \pi^- + \text{c.c.} \rightarrow$	$< 5 \times 10^{-5}$	CL=90%	—	DESIG=97
$\eta \pi^+ \pi^-$				
$\pi_1(1600)^+ \pi^- + \text{c.c.} \rightarrow$	$< 1.5 \times 10^{-5}$	CL=90%	—	DESIG=98
$\eta \pi^+ \pi^-$				
$\pi_1(2015)^+ \pi^- + \text{c.c.} \rightarrow$	$< 8 \times 10^{-6}$	CL=90%	—	DESIG=99
$\eta \pi^+ \pi^-$				
$f_2(1270) \eta$	$(6.7 \pm 1.1) \times 10^{-4}$		1467	DESIG=37
$\pi^+ \pi^- \eta'$	$(2.2 \pm 0.4) \times 10^{-3}$		1612	DESIG=44
$K^+ K^- \eta'(958)$	$(8.8 \pm 0.9) \times 10^{-4}$		1461	DESIG=85
$K_0^*(1430)^+ K^- + \text{c.c.}$	$(6.4^{+2.2}_{-2.8}) \times 10^{-4}$		—	DESIG=86
$f_0(980) \eta'(958)$	$(1.6^{+1.4}_{-0.7}) \times 10^{-4}$		1460	DESIG=87
$f_0(1710) \eta'(958)$	$(7^{+7}_{-5}) \times 10^{-5}$		1100	DESIG=88
$f_2'(1525) \eta'(958)$	$(9 \pm 6) \times 10^{-5}$		1229	DESIG=89
$K_2^*(1430)^+ K^- + \text{c.c.}$	$(1.61 \pm 0.31) \times 10^{-3}$		1416	DESIG=115
$K_2^*(1430) \bar{K}^0 + \text{c.c.}$	$(1.17 \pm 0.20) \times 10^{-3}$		1416	DESIG=116
$\pi^0 f_0(980) \rightarrow \pi^0 \pi^+ \pi^-$	$(3.5 \pm 0.9) \times 10^{-7}$		—	DESIG=61
$K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.}$	$(3.2 \pm 2.1) \times 10^{-3}$		1577	DESIG=10
$K^*(892)^0 \bar{K}^*(892)^0$	$(1.4 \pm 0.4) \times 10^{-3}$		1512	DESIG=21
$K^+ K^- K_S^0 K_S^0$	$< 4 \times 10^{-4}$	CL=90%	1390	DESIG=29
$K_S^0 K_S^0 K_S^0 K_S^0$	$(3.5 \pm 1.0) \times 10^{-5}$		1387	DESIG=102
$K^+ K^- K^+ K^-$	$(5.4 \pm 1.1) \times 10^{-4}$		1393	DESIG=14
$K^+ K^- \phi$	$(4.1 \pm 1.5) \times 10^{-4}$		1440	DESIG=30

$\bar{K}^0 K^+ \pi^- \phi + \text{c.c.}$	$(3.3 \pm 0.5) \times 10^{-3}$		1387	DESIG=90
$K^+ K^- \pi^0 \phi$	$(1.62 \pm 0.30) \times 10^{-3}$		1390	DESIG=91
$3(K^+ K^-)$	$(4.2 \pm 1.1) \times 10^{-6}$		779	DESIG=119
$\phi \pi^+ \pi^- \pi^0$	$(7.5 \pm 1.0) \times 10^{-4}$		1578	DESIG=82
$\omega \omega$	$(5.7 \pm 0.7) \times 10^{-4}$		1571	DESIG=66
$\omega K^+ K^-$	$(7.8 \pm 0.9) \times 10^{-4}$		1513	DESIG=81
$\omega \phi$	$(2.7 \pm 0.4) \times 10^{-5}$		1503	DESIG=67
$\phi \phi$	$(4.26 \pm 0.21) \times 10^{-4}$		1429	DESIG=68
$\phi \phi \eta$	$(3.0 \pm 0.5) \times 10^{-4}$		1172	DESIG=104
$p \bar{p}$	$(7.6 \pm 0.4) \times 10^{-5}$	S=1.2	1484	DESIG=11
$p \bar{p} \pi^0$	$(1.55 \pm 0.18) \times 10^{-4}$		1438	DESIG=39
$p \bar{p} \eta$	$(1.45 \pm 0.25) \times 10^{-4}$		1254	DESIG=43
$p \bar{p} \omega$	$(2.12 \pm 0.31) \times 10^{-4}$		1117	DESIG=59
$p \bar{p} \phi$	$< 1.7 \times 10^{-5}$	CL=90%	962	DESIG=65
$p \bar{p} \pi^+ \pi^-$	$(5.0 \pm 1.9) \times 10^{-4}$		1381	DESIG=8
$p \bar{p} \pi^0 \pi^0$	$< 5 \times 10^{-4}$	CL=90%	1385	DESIG=54
$p \bar{p} K^+ K^- (\text{non-resonant})$	$(1.27 \pm 0.22) \times 10^{-4}$		974	DESIG=62
$p \bar{p} K_S^0 K_S^0$	$< 4.5 \times 10^{-4}$	CL=90%	968	DESIG=25
$p \bar{p} K_S^0 K^- \pi^+ + \text{c.c.}$	$(4.2 \pm 0.5) \times 10^{-5}$		857	DESIG=120
$p \bar{n} \pi^-$	$(3.8 \pm 0.5) \times 10^{-4}$		1435	DESIG=74
$\bar{p} n \pi^+$	$(3.9 \pm 0.5) \times 10^{-4}$		1435	DESIG=75
$p \bar{n} \pi^- \pi^0$	$(1.03 \pm 0.12) \times 10^{-3}$		1383	DESIG=76
$\bar{p} n \pi^+ \pi^0$	$(1.01 \pm 0.12) \times 10^{-3}$		1383	DESIG=77
$\Lambda \bar{\Lambda}$	$(1.27 \pm 0.09) \times 10^{-4}$	S=1.1	1355	DESIG=19
$\Lambda \bar{\Lambda} \pi^+ \pi^-$	$(2.9 \pm 0.5) \times 10^{-4}$		1223	DESIG=24
$\Lambda \bar{\Lambda} \pi^+ \pi^- (\text{non-resonant})$	$(2.5 \pm 0.6) \times 10^{-4}$		1223	DESIG=69
$\Sigma(1385)^+ \bar{\Lambda} \pi^- + \text{c.c.}$	$< 1.3 \times 10^{-4}$	CL=90%	1157	DESIG=70
$\Sigma(1385)^- \bar{\Lambda} \pi^+ + \text{c.c.}$	$< 1.3 \times 10^{-4}$	CL=90%	1157	DESIG=71
$\Lambda \bar{\Lambda} \eta$	$(5.9 \pm 1.5) \times 10^{-5}$		1059	DESIG=111
$\Lambda \bar{\Lambda} \omega$	$(1.01 \pm 0.16) \times 10^{-4}$		877	DESIG=118
$\Lambda \bar{\Lambda} \phi$	$(6.0 \pm 1.0) \times 10^{-5}$		634	DESIG=117
$K^+ \bar{p} \Lambda + \text{c.c.}$	$(4.2 \pm 0.4) \times 10^{-4}$	S=1.2	1203	DESIG=40
$n K_S^0 \bar{\Lambda} + \text{c.c.}$	$(1.66 \pm 0.17) \times 10^{-4}$		1200	DESIG=109
$\bar{p} \Lambda(1520) K_S^0 \pi^+ + \text{c.c.}$	$(4.1 \pm 0.9) \times 10^{-5}$		829	DESIG=121
$K^*(892)^+ \bar{p} \Lambda + \text{c.c.}$	$(4.9 \pm 0.7) \times 10^{-4}$		935	DESIG=106
$K^+ \bar{p} \Lambda(1520) + \text{c.c.}$	$(1.7 \pm 0.4) \times 10^{-4}$		951	DESIG=63
$\Lambda(1520) \bar{\Lambda}(1520)$	$< 9 \times 10^{-5}$	CL=90%	880	DESIG=64
$\Sigma^0 \bar{\Sigma}^0$	$(4.2 \pm 0.6) \times 10^{-5}$		1288	DESIG=48
$\Sigma^+ \bar{p} K_S^0 + \text{c.c.}$	$(1.53 \pm 0.12) \times 10^{-4}$		1163	DESIG=105
$\Sigma^0 \bar{p} K^+ + \text{c.c.}$	$(1.46 \pm 0.10) \times 10^{-4}$		1163	DESIG=108
$\Sigma^+ \bar{\Sigma}^-$	$(3.6 \pm 0.7) \times 10^{-5}$		1291	DESIG=49
$\Sigma^+ \bar{\Sigma}^- \eta$	$(5.1 \pm 1.4) \times 10^{-5}$		958	DESIG=122
$\Sigma^- \bar{\Sigma}^+$	$(5.7 \pm 1.5) \times 10^{-5}$		1283	DESIG=107
$\Sigma(1385)^+ \bar{\Sigma}(1385)^-$	$< 9 \times 10^{-5}$	CL=90%	1081	DESIG=72
$\Sigma(1385)^- \bar{\Sigma}(1385)^+$	$< 5 \times 10^{-5}$	CL=90%	1081	DESIG=73
$K^- \Lambda \bar{\Xi}^+ + \text{c.c.}$	$(1.35 \pm 0.24) \times 10^{-4}$		963	DESIG=92
$\Xi^0 \bar{\Xi}^0$	$(7.5 \pm 1.3) \times 10^{-5}$		1163	DESIG=50
$\Xi^- \bar{\Xi}^+$	$(6.0 \pm 0.6) \times 10^{-5}$		1155	DESIG=26
$\Omega^- \bar{\Omega}^+$	$(1.49 \pm 0.25) \times 10^{-5}$		533	DESIG=113
$\pi^+ \pi^- + K^+ K^-$	$< 2.1 \times 10^{-3}$		—	DESIG=23
$K_S^0 K_S^0$	$< 6 \times 10^{-5}$	CL=90%	1683	DESIG=27
$\eta_c \pi^+ \pi^-$	$< 3.2 \times 10^{-3}$	CL=90%	413	DESIG=83

Radiative decays

$\gamma J/\psi(1S)$	$(34.3 \pm 1.3) \%$	S=1.3	389
$\gamma \rho^0$	$(2.16 \pm 0.17) \times 10^{-4}$		1670
$\gamma \omega$	$(6.8 \pm 0.8) \times 10^{-5}$		1668
$\gamma \phi$	$(2.4 \pm 0.5) \times 10^{-5}$		1607
$\gamma \gamma$	$< 6.3 \times 10^{-6}$	CL=90%	1755
$e^+ e^- J/\psi(1S)$	$(3.46 \pm 0.24) \times 10^{-3}$		389
$\mu^+ \mu^- J/\psi(1S)$	$(2.33 \pm 0.29) \times 10^{-4}$		335

NODE=M055;CLUMP=B

DESIG=1

DESIG=45

DESIG=46

DESIG=47

DESIG=4

DESIG=100

DESIG=103

 $h_c(1P)$

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

NODE=M144

Mass $m = 3525.37 \pm 0.14$ MeV (S = 1.2)

NODE=M144M;DTYPE=M

Full width $\Gamma = 0.78 \pm 0.28$ MeV

NODE=M144W;DTYPE=G

$h_c(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	P (MeV/c)
$J/\psi(1S)\pi^0$	$< 5 \times 10^{-4}$	90%	382
$J/\psi(1S)\pi\pi$	$< 9 \times 10^{-5}$	90%	312
$J/\psi(1S)\pi^+\pi^-$	$< 9 \times 10^{-4}$	90%	305
$p\bar{p}$	$< 4 \times 10^{-5}$	90%	1492
$p\bar{p}\pi^0$	$< 8 \times 10^{-4}$	90%	1447
$p\bar{p}\pi^+\pi^-$	$(3.3 \pm 0.6) \times 10^{-3}$		1390
$p\bar{p}\pi^0\pi^0$	$< 6 \times 10^{-4}$	90%	1394
$p\bar{p}\pi^+\pi^-\pi^0$	$(4.4 \pm 1.3) \times 10^{-3}$		1331
$p\bar{p}\eta$	$(7.4 \pm 2.2) \times 10^{-4}$		1264
$\pi^+\pi^-\pi^0$	$(1.57 \pm 0.13) \times 10^{-3}$		1749
$\pi^+\pi^-\eta$	$< 5 \times 10^{-4}$	90%	1709
$\pi^+\pi^-\pi^0\eta$	$(8.3 \pm 2.4) \times 10^{-3}$		1695
$2\pi^+2\pi^-\pi^0\eta$	$(7.2 \pm 1.7) \times 10^{-3}$		1648
$2\pi^+2\pi^-\pi^0$	$(9.4 \pm 1.7) \times 10^{-3}$		1716
$2\pi^+2\pi^-\eta$	$< 6 \times 10^{-4}$	90%	1674
$3\pi^+3\pi^-\pi^0$	$(9.1 \pm 1.5) \times 10^{-3}$		1661
$2\pi^+2\pi^-\omega$	$(3.9 \pm 1.0) \times 10^{-3}$		1627
$K^+K^-\pi^+\pi^-$	$< 7 \times 10^{-4}$	90%	1640
$K^+K^-\pi^+\pi^-\pi^0$	$(3.8 \pm 0.8) \times 10^{-3}$		1606
$K^+K^-\pi^+\pi^-\eta$	$< 2.7 \times 10^{-3}$	90%	1480
$K^+K^-\pi^0$	$(3.8 \pm 0.9) \times 10^{-4}$		1670
$K^+K^-\pi^0\eta$	$< 2.4 \times 10^{-3}$	90%	1532
$K^+K^-\eta$	$(3.6 \pm 1.2) \times 10^{-4}$		1574
$2K^+2K^-\pi^0$	$< 2.8 \times 10^{-4}$	90%	1339
$K_S^0 K^\pm \pi^\mp$	$(7.1 \pm 1.9) \times 10^{-4}$		1668
$K_S^0 K^\pm \pi^\mp \pi^+ \pi^-$	$(3.2 \pm 1.0) \times 10^{-3}$		1604

NODE=M144215;DESIG=1

DESIG=2

DESIG=10

DESIG=3

DESIG=24

DESIG=11

DESIG=13

DESIG=25

DESIG=23

DESIG=5

DESIG=31

DESIG=14

DESIG=29

DESIG=6

DESIG=30

DESIG=7

DESIG=28

DESIG=12

DESIG=15

DESIG=16

DESIG=17

DESIG=18

DESIG=19

DESIG=20

DESIG=21

DESIG=22

Radiative decays

$\gamma \eta$	$(3.8 \pm 0.6) \times 10^{-4}$		1720
$\gamma \eta'(958)$	$(1.41 \pm 0.15) \times 10^{-3}$		1633
$\gamma \pi^0$	$< 5 \times 10^{-5}$		1760
$\gamma \eta_c(1S)$	$(60 \pm 4) \%$		500
$e^+ e^- \eta_c(1S)$	$(3.5 \pm 0.7) \times 10^{-3}$		500

NODE=M144;CLUMP=R

DESIG=9

DESIG=8

DESIG=32

DESIG=4

DESIG=33

 $\chi_{c2}(1P)$

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

NODE=M057

Mass $m = 3556.17 \pm 0.07$ MeV

NODE=M057M;DTYPE=M

Full width $\Gamma = 1.97 \pm 0.09$ MeV (S = 1.1)

NODE=M057W;DTYPE=G

$\chi_{c2}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
Hadronic decays				NODE=M057215;NODE=M057;CLUMP=A
$2(\pi^+\pi^-)$	(1.12±0.08) %	S=1.5	1751	DESIG=3
$\pi^+\pi^-\pi^0\pi^0$	(1.86±0.24) %		1752	DESIG=50
$\rho^+\pi^-\pi^0 + \text{c.c.}$	(2.22±0.35) %		1682	DESIG=51
$4\pi^0$	(1.13±0.15) $\times 10^{-3}$		1752	DESIG=62
$K^+K^-\pi^0\pi^0$	(2.1 ±0.4) $\times 10^{-3}$		1658	DESIG=52
$K^+\pi^-\bar{K}^0\pi^0 + \text{c.c.}$	(1.40±0.20) %		1657	DESIG=54
$\rho^-K^+\bar{K}^0 + \text{c.c.}$	(4.2 ±1.3) $\times 10^{-3}$		1540	DESIG=55
$K^*(892)^0K^-\pi^+ \rightarrow$	(3.0 ±0.8) $\times 10^{-3}$		—	DESIG=60
$K^-\pi^+K^0\pi^0 + \text{c.c.}$				
$K^*(892)^0\bar{K}^0\pi^0 \rightarrow$	(3.9 ±0.9) $\times 10^{-3}$		—	DESIG=56
$K^+\pi^-\bar{K}^0\pi^0 + \text{c.c.}$				
$K^*(892)^-K^+\pi^0 \rightarrow$	(3.8 ±0.8) $\times 10^{-3}$		—	DESIG=57
$K^+\pi^-\bar{K}^0\pi^0 + \text{c.c.}$				
$K^*(892)^+\bar{K}^0\pi^- \rightarrow$	(3.0 ±0.8) $\times 10^{-3}$		—	DESIG=58
$K^+\pi^-\bar{K}^0\pi^0 + \text{c.c.}$				
$K^+K^-\eta\pi^0$	(1.3 ±0.4) $\times 10^{-3}$		1549	DESIG=59
$K^+K^-\pi^+\pi^-$	(8.4 ±1.1) $\times 10^{-3}$	S=1.2	1656	DESIG=5
$K^+K^-\pi^+\pi^-\pi^0$	(1.17±0.13) %		1623	DESIG=67
$K_S^0K^\pm\pi^\mp\pi^+\pi^-$	(7.3 ±0.8) $\times 10^{-3}$		1621	DESIG=78
$K^+\bar{K}^*(892)^0\pi^- + \text{c.c.}$	(2.1 ±1.0) $\times 10^{-3}$		1602	DESIG=10
$K^*(892)^0\bar{K}^*(892)^0$	(2.2 ±0.9) $\times 10^{-3}$	S=2.2	1538	DESIG=21
$3(\pi^+\pi^-)$	(1.53±0.19) %	S=3.8	1707	DESIG=4
$\phi\phi$	(1.23±0.07) $\times 10^{-3}$	S=1.9	1457	DESIG=16
$\phi\phi\eta$	(5.4 ±0.7) $\times 10^{-4}$		1206	DESIG=99
$\omega\omega$	(8.6 ±1.0) $\times 10^{-4}$		1597	DESIG=25
ωK^+K^-	(7.3 ±0.9) $\times 10^{-4}$		1540	DESIG=79
$\omega\phi$	(9.7 ±2.8) $\times 10^{-6}$		1529	DESIG=68
$\pi\pi$	(2.26±0.10) $\times 10^{-3}$		1773	DESIG=22
$\rho^0\pi^+\pi^-$	(4.0 ±1.7) $\times 10^{-3}$		1682	DESIG=9
$\pi^+\pi^-\pi^0(\text{non-resonant})$	(2.0 ±0.4) $\times 10^{-5}$		1765	DESIG=95
$\rho(770)^\pm\pi^\mp$	(6 ±4) $\times 10^{-6}$		—	DESIG=96
$\pi^+\pi^-\eta$	(4.9 ±1.3) $\times 10^{-4}$		1724	DESIG=39
$\pi^+\pi^-\eta'$	(5.1 ±1.9) $\times 10^{-4}$		1636	DESIG=42
$\eta\eta$	(5.5 ±0.4) $\times 10^{-4}$		1692	DESIG=14
K^+K^-	(1.02±0.15) $\times 10^{-3}$	S=2.2	1708	DESIG=2
$K_S^0K_S^0$	(5.3 ±0.4) $\times 10^{-4}$		1707	DESIG=15
$K^*(892)^\pm K^\mp$	(1.46±0.21) $\times 10^{-4}$		1627	DESIG=87
$K^*(892)^0\bar{K}^0 + \text{c.c.}$	(1.26±0.27) $\times 10^{-4}$		1627	DESIG=88
$K_2^*(1430)^\pm K^\mp$	(1.51±0.13) $\times 10^{-3}$		—	DESIG=89
$K_2^*(1430)^0\bar{K}^0 + \text{c.c.}$	(1.26±0.17) $\times 10^{-3}$		1443	DESIG=90
$K_3^*(1780)^\pm K^\mp$	(5.2 ±0.8) $\times 10^{-4}$		—	DESIG=91
$K_3^*(1780)^0\bar{K}^0 + \text{c.c.}$	(5.7 ±2.1) $\times 10^{-4}$		1274	DESIG=92
$a_2(1320)^0\pi^0$	(1.31±0.35) $\times 10^{-3}$		—	DESIG=93
$a_2(1320)^\pm\pi^\mp$	(1.8 ±0.6) $\times 10^{-3}$		1530	DESIG=94
$\bar{K}^0K^+\pi^- + \text{c.c.}$	(1.30±0.19) $\times 10^{-3}$		1685	DESIG=17
$K^+K^-\pi^0$	(3.1 ±0.8) $\times 10^{-4}$		1686	DESIG=36
$K^+K^-\eta$	< 3.3 $\times 10^{-4}$	CL=90%	1592	DESIG=40
$K^+K^-\eta'(958)$	(1.94±0.34) $\times 10^{-4}$		1488	DESIG=82
$\eta\eta'$	(2.2 ±0.5) $\times 10^{-5}$		1600	DESIG=34
$\eta'\eta'$	(4.6 ±0.6) $\times 10^{-5}$		1498	DESIG=35
$\pi^+\pi^-K_S^0K_S^0$	(2.2 ±0.5) $\times 10^{-3}$		1655	DESIG=29
$K^+K^-K_S^0K_S^0$	< 4 $\times 10^{-4}$	CL=90%	1418	DESIG=30
$K_S^0K_S^0K_S^0K_S^0$	(1.15±0.18) $\times 10^{-4}$		1415	DESIG=97
$K^+K^-K^+K^-$	(1.67±0.22) $\times 10^{-3}$	S=1.1	1421	DESIG=24
$K^+K^-\phi$	(1.44±0.30) $\times 10^{-3}$		1468	DESIG=32

$\bar{K}^0 K^+ \pi^- \phi + \text{c.c.}$	$(4.8 \pm 0.7) \times 10^{-3}$		1416	DESIG=83
$K^+ K^- \pi^0 \phi$	$(2.7 \pm 0.5) \times 10^{-3}$		1419	DESIG=84
$3(K^+ K^-)$	$(7.2 \pm 1.5) \times 10^{-6}$		818	DESIG=109
$\phi \pi^+ \pi^- \pi^0$	$(9.3 \pm 1.2) \times 10^{-4}$		1603	DESIG=80
$p \bar{p}$	$(7.3 \pm 0.4) \times 10^{-5}$	S=1.1	1510	DESIG=11
$p \bar{p} \pi^0$	$(4.7 \pm 0.4) \times 10^{-4}$		1465	DESIG=37
$p \bar{p} \eta$	$(1.77 \pm 0.25) \times 10^{-4}$		1285	DESIG=41
$p \bar{p} \omega$	$(3.7 \pm 0.4) \times 10^{-4}$		1152	DESIG=61
$p \bar{p} \phi$	$(2.8 \pm 0.9) \times 10^{-5}$		1002	DESIG=66
$p \bar{p} \pi^+ \pi^-$	$(1.32 \pm 0.34) \times 10^{-3}$		1410	DESIG=8
$p \bar{p} \pi^0 \pi^0$	$(8.0 \pm 2.4) \times 10^{-4}$		1414	DESIG=53
$p \bar{p} K^+ K^- (\text{non-resonant})$	$(1.94 \pm 0.32) \times 10^{-4}$		1013	DESIG=63
$p \bar{p} K_S^0 K_S^0$	$< 7.9 \times 10^{-4}$	CL=90%	1007	DESIG=28
$p \bar{p} K_S^0 K^- \pi^+ + \text{c.c.}$	$(5.7 \pm 0.6) \times 10^{-5}$		900	DESIG=110
$p \bar{n} \pi^-$	$(8.7 \pm 1.0) \times 10^{-4}$		1463	DESIG=31
$\bar{p} n \pi^+$	$(9.1 \pm 0.8) \times 10^{-4}$		1463	DESIG=75
$p \bar{n} \pi^- \pi^0$	$(2.21 \pm 0.18) \times 10^{-3}$		1411	DESIG=76
$\bar{p} n \pi^+ \pi^0$	$(2.14 \pm 0.19) \times 10^{-3}$		1411	DESIG=77
$\Lambda \bar{\Lambda}$	$(1.86 \pm 0.16) \times 10^{-4}$		1384	DESIG=19
$\Lambda \bar{\Lambda} \pi^+ \pi^-$	$(1.27 \pm 0.16) \times 10^{-3}$		1255	DESIG=27
$\Lambda \bar{\Lambda} \pi^+ \pi^- (\text{non-resonant})$	$(6.7 \pm 1.5) \times 10^{-4}$		1255	DESIG=70
$\Sigma(1385)^+ \bar{\Lambda} \pi^- + \text{c.c.}$	$< 4 \times 10^{-4}$	CL=90%	1192	DESIG=71
$\Sigma(1385)^- \bar{\Lambda} \pi^+ + \text{c.c.}$	$< 6 \times 10^{-4}$	CL=90%	1192	DESIG=72
$\Lambda \bar{\Lambda} \eta$	$(1.07 \pm 0.26) \times 10^{-4}$		1096	DESIG=105
$\Lambda \bar{\Lambda} \omega$	$(1.42 \pm 0.22) \times 10^{-4}$		921	DESIG=108
$\Lambda \bar{\Lambda} \phi$	$(7.2 \pm 0.9) \times 10^{-5}$		691	DESIG=107
$K^+ \bar{p} \Lambda + \text{c.c.}$	$(7.9 \pm 0.5) \times 10^{-4}$		1236	DESIG=38
$n K_S^0 \bar{\Lambda} + \text{c.c.}$	$(3.63 \pm 0.29) \times 10^{-4}$		1233	DESIG=104
$K^*(892)^+ \bar{p} \Lambda + \text{c.c.}$	$(8.3 \pm 1.2) \times 10^{-4}$		976	DESIG=101
$K^+ \bar{p} \Lambda(1520) + \text{c.c.}$	$(2.9 \pm 0.7) \times 10^{-4}$		992	DESIG=64
$\bar{p} \Lambda(1520) K_S^0 \pi^+ + \text{c.c.}$	$(4.1 \pm 1.0) \times 10^{-5}$		876	DESIG=111
$\Lambda(1520) \bar{\Lambda}(1520)$	$(4.7 \pm 1.5) \times 10^{-4}$		924	DESIG=65
$\Sigma^0 \bar{\Sigma}^0$	$(3.7 \pm 0.6) \times 10^{-5}$		1319	DESIG=47
$\Sigma^+ \bar{p} K_S^0 + \text{c.c.}$	$(8.4 \pm 1.0) \times 10^{-5}$		1197	DESIG=100
$\Sigma^0 \bar{p} K^+ + \text{c.c.}$	$(9.3 \pm 0.8) \times 10^{-5}$		1197	DESIG=103
$\Sigma^+ \bar{\Sigma}^-$	$(3.4 \pm 0.7) \times 10^{-5}$		1322	DESIG=48
$\Sigma^+ \bar{\Sigma}^- \eta$	$(5.5 \pm 1.3) \times 10^{-5}$		998	DESIG=112
$\Sigma^- \bar{\Sigma}^+$	$(4.5 \pm 1.8) \times 10^{-5}$		1314	DESIG=102
$\Sigma(1385)^+ \bar{\Sigma}(1385)^-$	$< 1.6 \times 10^{-4}$	CL=90%	1118	DESIG=73
$\Sigma(1385)^- \bar{\Sigma}(1385)^+$	$< 8 \times 10^{-5}$	CL=90%	1118	DESIG=74
$K^- \bar{\Lambda} \Xi^+ + \text{c.c.}$	$(1.79 \pm 0.32) \times 10^{-4}$		1004	DESIG=85
$\Xi^0 \Xi^0$	$(1.86 \pm 0.22) \times 10^{-4}$		1197	DESIG=49
$\Xi^- \Xi^+$	$(1.46 \pm 0.12) \times 10^{-4}$		1189	DESIG=26
$\Omega^- \bar{\Omega}^+$	$(4.52 \pm 0.30) \times 10^{-5}$		604	DESIG=106
$J/\psi(1S) \pi^+ \pi^- \pi^0$	$< 1.5 \%$	CL=90%	185	DESIG=12
$\pi^0 \eta_c$	$< 3.2 \times 10^{-3}$	CL=90%	511	DESIG=81
$\eta_c(1S) \pi^+ \pi^-$	$< 5.4 \times 10^{-3}$	CL=90%	459	DESIG=69

Radiative decays

$\gamma J/\psi(1S)$	$(19.5 \pm 0.7) \%$	S=1.5	430	NODE=M057;CLUMP=B
$\gamma \rho^0$	$< 1.9 \times 10^{-5}$	CL=90%	1694	DESIG=6
$\gamma \omega$	$< 6 \times 10^{-6}$	CL=90%	1692	DESIG=44
$\gamma \phi$	$< 8 \times 10^{-6}$	CL=90%	1632	DESIG=45
$\gamma \gamma$	$(2.91 \pm 0.12) \times 10^{-4}$	S=1.3	1778	DESIG=46
$e^+ e^- J/\psi(1S)$	$(2.20 \pm 0.15) \times 10^{-3}$		430	DESIG=7
$\mu^+ \mu^- J/\psi(1S)$	$(2.07 \pm 0.34) \times 10^{-4}$		381	DESIG=86
				DESIG=98

 $\eta_c(2S)$

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

NODE=M059

Quantum numbers are quark model predictions.

Mass $m = 3637.8 \pm 0.6 \text{ MeV}$ (S = 1.1)Full width $\Gamma = 11.6 \pm 1.4 \text{ MeV}$

NODE=M059M;DTYPE=M

NODE=M059W;DTYPE=G

$\eta_c(2S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	P (MeV/c)	
hadrons	seen		—	NODE=M059215;DESIG=1;OUR EST; DESIG=4
$K\bar{K}\pi$	$(1.9^{+1.2}_{-1.0})\%$		1729	DESIG=4
$K\bar{K}\eta$	$(7^{+5}_{-4}) \times 10^{-3}$		1637	DESIG=20
$2\pi^+2\pi^-$	$< 2.6 \times 10^{-3}$	90%	1792	DESIG=5
$a_0(1450)\pi$	seen		1531	DESIG=27
$a_2(1700)\pi$	seen		1415	DESIG=28
$a_0(1710)\pi$	seen		1412	DESIG=26
$\rho^0\rho^0$	$< 2.3 \times 10^{-3}$	90%	1645	DESIG=16
$3\pi^+3\pi^-$	$(1.7^{+0.9}_{-1.1})\%$		1749	DESIG=8
$K^+K^-\pi^+\pi^-$	$< 2.5 \times 10^{-3}$	90%	1700	DESIG=6
$K^{*0}\bar{K}^{*0}$	$< 4 \times 10^{-3}$	90%	1585	DESIG=17
$K^+K^-\pi^+\pi^-\pi^0$	$(1.5^{+1.0}_{-0.9})\%$		1668	DESIG=9
$K^+K^-2\pi^+2\pi^-$	$< 1.8\%$	90%	1627	DESIG=10
$K_S^0 K^-2\pi^+\pi^- + \text{c.c.}$	$(1.4^{+0.8}_{-1.0})\%$		1666	DESIG=11
$2K^+2K^-$	$< 1.4 \times 10^{-3}$	90%	1470	DESIG=7
$K_2^*(1430)\bar{K} + \text{c.c.}$	seen		1493	DESIG=24
$K_0^*(1950)\bar{K} + \text{c.c.}$	seen		1231	DESIG=25
$K_0^*(2600)\bar{K} + \text{c.c.}$	seen		—	DESIG=29
$\phi\phi$	$< 1.4 \times 10^{-3}$	90%	1506	DESIG=18
$p\bar{p}$	$< 3.2 \times 10^{-4}$	90%	1558	DESIG=3
$p\bar{p}\pi^+\pi^-$	seen		1461	DESIG=22
$\gamma\gamma$	$(1.8^{+1.0}_{-1.1}) \times 10^{-4}$		1819	DESIG=2
$\gamma J/\psi(1S)$	$< 1.8\%$	90%	501	DESIG=21
$\pi^+\pi^-\eta$	$(5.5^{+3.3}_{-4.0}) \times 10^{-3}$		1766	DESIG=12
$\pi^+\pi^-\eta'$	$(2.7^{+2.0}_{-1.8}) \times 10^{-3}$		1680	DESIG=13
$\pi^+\pi^-\eta_c(1S)$	$< 4\%$	90%	538	DESIG=15

 $\psi(2S)$

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

Mass $m = 3686.097 \pm 0.011$ MeV (S = 1.1)Full width $\Gamma = 293 \pm 9$ keV (S = 1.2)

NODE=M071

NODE=M071M;DTYPE=M

NODE=M071W;DTYPE=G

$\psi(2S)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
hadrons	(97.85 $\pm$ 0.13) %	—	—	NODE=M071220;DESIG=3
virtual $\gamma \rightarrow$ hadrons	(1.79 $\pm$ 0.04) %	—	—	DESIG=4
$g g g$	(10.6 $\pm$ 1.6) %	—	—	DESIG=255
$\gamma g g$	(1.03 $\pm$ 0.29) %	—	—	DESIG=256
light hadrons	(15.4 $\pm$ 1.5) %	—	—	DESIG=226
K_S^0 anything	(16.0 $\pm$ 1.1) %	—	—	DESIG=325
$e^+ e^-$	(7.94 $\pm$ 0.22) $\times 10^{-3}$	S=1.3	1843	DESIG=1
$\mu^+ \mu^-$	(8.0 $\pm$ 0.6) $\times 10^{-3}$	—	1840	DESIG=2
$\tau^+ \tau^-$	(3.1 $\pm$ 0.4) $\times 10^{-3}$	—	489	DESIG=68
Decays into $J/\psi(1S)$ and anything				NODE=M071;CLUMP=A
$J/\psi(1S)$ anything	(61.5 $\pm$ 0.7) %	S=1.3	—	DESIG=11
$J/\psi(1S)$ neutrals	(25.4 $\pm$ 0.5) %	S=1.6	—	DESIG=12
$J/\psi(1S) \pi^+ \pi^-$	(34.69 $\pm$ 0.34) %	S=1.1	477	DESIG=13
$J/\psi(1S) \pi^0 \pi^0$	(18.2 $\pm$ 0.5) %	S=1.6	481	DESIG=14
$J/\psi(1S) \eta$	(3.37 $\pm$ 0.06) %	S=1.2	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
$\pi^+ \pi^-$	(7.8 $\pm$ 2.6) $\times 10^{-6}$	—	1838	DESIG=21
$\pi^+ \pi^- \pi^0$	(2.01 $\pm$ 0.17) $\times 10^{-4}$	S=1.7	1830	DESIG=36
$\rho(770) \pi \rightarrow \pi^+ \pi^- \pi^0$	(3.2 $\pm$ 1.2) $\times 10^{-5}$	S=1.8	—	DESIG=22
$\rho(2150) \pi \rightarrow \pi^+ \pi^- \pi^0$	(1.9 $\pm$ 1.2) $\times 10^{-4}$	—	—	DESIG=201
$2(\pi^+ \pi^-)$	(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
$2(\pi^+ \pi^-) \pi^0$	(2.9 $\pm$ 1.0) $\times 10^{-3}$	S=4.7	1799	DESIG=25
$\rho a_2(1320)$	(2.6 $\pm$ 0.9) $\times 10^{-4}$	—	1500	DESIG=65
$\pi^+ \pi^- \pi^0 \pi^0 \pi^0$	(5.3 $\pm$ 1.0) $\times 10^{-3}$	—	1800	DESIG=312
$\rho^\pm \pi^\mp \pi^0 \pi^0$	< 2.7 $\times 10^{-3}$	CL=90%	1737	DESIG=315
$\pi^+ \pi^- 4\pi^0$	(1.4 $\pm$ 1.0) $\times 10^{-3}$	—	1778	DESIG=332
$3(\pi^+ \pi^-)$	(3.5 $\pm$ 2.0) $\times 10^{-4}$	S=2.8	1774	DESIG=32
$2(\pi^+ \pi^- \pi^0)$	(4.8 $\pm$ 1.5) $\times 10^{-3}$	—	1776	DESIG=221
$3(\pi^+ \pi^-) \pi^0$	(3.5 $\pm$ 1.6) $\times 10^{-3}$	—	1746	DESIG=37
$2(\pi^+ \pi^-) 3\pi^0$	(1.42 $\pm$ 0.31) %	—	1748	DESIG=329
$\eta \pi^+ \pi^-$	< 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
$\eta 2(\pi^+ \pi^-)$	(1.2 $\pm$ 0.6) $\times 10^{-3}$	—	1758	DESIG=251
$\eta \pi^+ \pi^- \pi^0 \pi^0$	< 4 $\times 10^{-4}$	CL=90%	1760	DESIG=313
$\eta \pi^+ \pi^- 3\pi^0$	< 2.1 $\times 10^{-3}$	CL=90%	1736	DESIG=334
$\eta 2(\pi^+ \pi^- \pi^0)$	< 2.1 $\times 10^{-3}$	CL=90%	1705	DESIG=328
$\rho \eta$	(2.2 $\pm$ 0.6) $\times 10^{-5}$	S=1.1	1717	DESIG=94
$\eta' \pi^+ \pi^- \pi^0$	(4.5 $\pm$ 2.1) $\times 10^{-4}$	—	1692	DESIG=204
$\eta' \rho$	(1.9 $\pm$ 1.7) $\times 10^{-5}$	—	1625	DESIG=93
$\omega \pi^0$	(2.1 $\pm$ 0.6) $\times 10^{-5}$	—	1757	DESIG=92
$\omega \pi^+ \pi^-$	(7.3 $\pm$ 1.2) $\times 10^{-4}$	S=2.1	1748	DESIG=75
$\omega \pi^+ \pi^- 2\pi^0$	(8.7 $\pm$ 2.4) $\times 10^{-3}$	—	1715	DESIG=327
$b_1^\pm \pi^\mp$	(4.0 $\pm$ 0.6) $\times 10^{-4}$	S=1.1	1635	DESIG=40
$\omega f_2(1270)$	(2.2 $\pm$ 0.4) $\times 10^{-4}$	—	1515	DESIG=64
$\omega \pi^0 \pi^0$	(1.11 $\pm$ 0.35) $\times 10^{-3}$	—	1749	DESIG=314
$\omega 3\pi^0$	< 8 $\times 10^{-4}$	CL=90%	1736	DESIG=333
$b_1^0 \pi^0$	(2.4 $\pm$ 0.6) $\times 10^{-4}$	—	—	DESIG=193
$\omega \eta$	< 1.1 $\times 10^{-5}$	CL=90%	1715	DESIG=95
$\omega \eta'$	(3.2 $\pm$ 2.5) $\times 10^{-5}$	—	1623	DESIG=91
$\phi \pi^0$	< 4 $\times 10^{-7}$	CL=90%	1699	DESIG=96
$\phi \pi^+ \pi^-$	(1.18 $\pm$ 0.26) $\times 10^{-4}$	S=1.5	1690	DESIG=78
$\phi f_0(980) \rightarrow \pi^+ \pi^-$	(7.5 $\pm$ 3.3) $\times 10^{-5}$	S=1.6	—	DESIG=81
$\phi \eta$	(3.10 $\pm$ 0.31) $\times 10^{-5}$	—	1654	DESIG=89

$\eta\phi(2170), \phi(2170) \rightarrow$	< 2.2	$\times 10^{-6}$	CL=90%	—	DESIG=316
$\phi f_0(980), f_0 \rightarrow \pi^+\pi^-$					
$\phi\eta'$	(1.54 ± 0.20)	$\times 10^{-5}$		1555	DESIG=90
$\phi\phi\phi$	(1.46 ± 0.18)	$\times 10^{-5}$		989	DESIG=354
$\phi f_1(1285)$	(3.0 ± 1.3)	$\times 10^{-5}$		1436	DESIG=319
$\phi\eta(1405) \rightarrow \phi\pi^+\pi^-\eta$	(8.5 ± 1.7)	$\times 10^{-6}$		—	DESIG=320
$\phi f_2'(1525)$	(4.4 ± 1.6)	$\times 10^{-5}$		1325	DESIG=67
K^+K^-	(7.5 ± 0.5)	$\times 10^{-5}$		1776	DESIG=23
$K^+K^-\pi^+\pi^-$	(7.3 ± 0.5)	$\times 10^{-4}$		1726	DESIG=26
$K^+K^-\pi^0$	(4.07 ± 0.31)	$\times 10^{-5}$		1754	DESIG=38
$K_S^0 K_S^0$	< 4.6	$\times 10^{-6}$		1775	DESIG=86
$K_S^0 K_L^0$	(5.34 ± 0.33)	$\times 10^{-5}$		1775	DESIG=85
$K_S^0 K_L^0 \pi^0$	< 3.0	$\times 10^{-4}$	CL=90%	1753	DESIG=303
$K^+K^-\pi^0\pi^0$	(2.6 ± 1.3)	$\times 10^{-4}$		1728	DESIG=298
$K^+K^-\pi^0\pi^0\pi^0$	(6.6 ± 2.8)	$\times 10^{-4}$		1696	DESIG=341
$K_S^0 K^\pm\pi^\mp\pi^0\pi^0$	(1.7 ± 0.6)	$\times 10^{-3}$		1694	DESIG=342
$K_S^0 K^\pm\pi^\mp\pi^+\pi^-$	(2.2 ± 0.4)	$\times 10^{-3}$		1692	DESIG=343
$K^+K^-\pi^+\pi^-\pi^0$	(1.26 ± 0.09)	$\times 10^{-3}$		1694	DESIG=206
$\omega f_0(1710) \rightarrow \omega K^+K^-$	(5.9 ± 2.2)	$\times 10^{-5}$		—	DESIG=216
$K^*(892)^0 K^-\pi^+\pi^0 + \text{c.c.}$	(8.6 ± 2.2)	$\times 10^{-4}$		—	DESIG=217
$K^*(892)^+ K^-\pi^+\pi^- + \text{c.c.}$	(9.6 ± 2.8)	$\times 10^{-4}$		—	DESIG=218
$K^*(892)^+ K^-\rho^0 + \text{c.c.}$	(7.3 ± 2.6)	$\times 10^{-4}$		—	DESIG=219
$K^*(892)^0 K^-\rho^+ + \text{c.c.}$	(6.1 ± 1.8)	$\times 10^{-4}$		—	DESIG=220
$K_S^0 K_S^0 \pi^+\pi^-$	(2.2 ± 0.4)	$\times 10^{-4}$		1724	DESIG=225
$K_S^0 K_L^0 \pi^0\pi^0$	(1.3 ± 0.6)	$\times 10^{-3}$		1726	DESIG=304
$K_S^0 K^*(892)^0 \pi^0\pi^0$	(3.0 ± 1.3)	$\times 10^{-4}$		1645	DESIG=348
$K_S^0 K^\pm \rho(770)^\mp \pi^0$	< 7	$\times 10^{-4}$	CL=90%	—	DESIG=352
$K_S^0 K^\pm \pi^\mp \rho(770)^0$	< 7	$\times 10^{-4}$	CL=90%	—	DESIG=353
$K^\mp K^*(892)^\pm \pi^0\pi^0$	(7.0 ± 2.9)	$\times 10^{-4}$		1646	DESIG=349
$K^*(892)^+ K^*(892)^-\pi^0$	(3.6 ± 1.8)	$\times 10^{-3}$		1573	DESIG=350
$K_S^0 K_L^0 \eta$	(1.3 ± 0.5)	$\times 10^{-3}$		1661	DESIG=305
$K^+K^-\rho^0$	(2.2 ± 0.4)	$\times 10^{-4}$		1616	DESIG=205
$K^*(892)^0 \bar{K}_2^*(1430)^0$	(1.9 ± 0.5)	$\times 10^{-4}$		1417	DESIG=66
$K^+K^-\pi^+\pi^-\eta$	(1.3 ± 0.7)	$\times 10^{-3}$		1574	DESIG=252
$K^+K^-\pi^+\pi^-$	(1.9 ± 0.9)	$\times 10^{-3}$		1654	DESIG=222
$K^+K^-\pi^+\pi^-\pi^0$	(1.00 ± 0.31)	$\times 10^{-3}$		1611	DESIG=240
$K^+K^*(892)^- + \text{c.c.}$	(2.9 ± 0.4)	$\times 10^{-5}$	S=1.2	1698	DESIG=39
$2(K^+K^-)$	(6.3 ± 1.3)	$\times 10^{-5}$		1499	DESIG=208
$2(K^+K^-)\pi^0$	(1.10 ± 0.28)	$\times 10^{-4}$		1440	DESIG=209
$K^+K^-\phi$	(7.0 ± 1.6)	$\times 10^{-5}$		1546	DESIG=79
$K_S^0 K_S^0 \phi$	(3.53 ± 0.29)	$\times 10^{-5}$		1543	DESIG=347
$K_1(1270)^\pm K^\mp$	(1.00 ± 0.28)	$\times 10^{-3}$		1588	DESIG=41
$K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.}$	(6.7 ± 2.5)	$\times 10^{-4}$		1674	DESIG=34
$\eta K^+K^-, \text{ no } \eta\phi$	(3.49 ± 0.17)	$\times 10^{-5}$		1664	DESIG=207
ηK^+K^-	< 2.6	$\times 10^{-4}$	CL=90%	1664	DESIG=351
$X(1750)\eta \rightarrow K^+K^-\eta$	(4.8 ± 2.8)	$\times 10^{-6}$		—	DESIG=324
$K_1(1400)^\pm K^\mp$	< 3.1	$\times 10^{-4}$	CL=90%	1532	DESIG=42
$K_2^*(1430)^\pm K^\mp$	(7.1 ± 1.3)	$\times 10^{-5}$		—	DESIG=265
$K^*(892)^0 \bar{K}^0 + \text{c.c.}$	(1.09 ± 0.20)	$\times 10^{-4}$		1697	DESIG=194
ωK^+K^-	(1.62 ± 0.11)	$\times 10^{-4}$	S=1.1	1614	DESIG=76
$\omega K_S^0 K_S^0$	(7.0 ± 0.5)	$\times 10^{-5}$		1612	DESIG=330
$\omega K^*(892)^+ K^- + \text{c.c.}$	(2.07 ± 0.26)	$\times 10^{-4}$		1482	DESIG=276
$\omega K_2^*(1430)^+ K^- + \text{c.c.}$	(6.1 ± 1.2)	$\times 10^{-5}$		1252	DESIG=277
$\omega \bar{K}^*(892)^0 K^0$	(1.68 ± 0.30)	$\times 10^{-4}$		1481	DESIG=278
$\omega \bar{K}_2^*(1430)^0 K^0$	(5.8 ± 2.2)	$\times 10^{-5}$		1250	DESIG=279
$\omega X(1440) \rightarrow \omega K_S^0 K^-\pi^+ + \text{c.c.}$	(1.6 ± 0.4)	$\times 10^{-5}$		—	DESIG=282

$\omega X(1440) \rightarrow \omega K^+ K^- \pi^0$	$(1.09 \pm 0.26) \times 10^{-5}$	—	DESIG=283
$\omega f_1(1285) \rightarrow \omega K_S^0 K^- \pi^+ +$ c.c.	$(3.0 \pm 1.0) \times 10^{-6}$	—	DESIG=284
$\omega f_1(1285) \rightarrow \omega K^+ K^- \pi^0$	$(1.2 \pm 0.7) \times 10^{-6}$	—	DESIG=285
$p\bar{p}$	$(2.94 \pm 0.09) \times 10^{-4}$	S=1.3 1586	DESIG=27
$n\bar{n}$	$(3.06 \pm 0.15) \times 10^{-4}$	1586	DESIG=309
$p\bar{p}\pi^0$	$(1.53 \pm 0.07) \times 10^{-4}$	1543	DESIG=35
$N(940)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\pi^0$	$(6.4 \pm_{-1.3}^{+1.8}) \times 10^{-5}$	—	DESIG=267
$N(1440)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\pi^0$	$(7.3 \pm_{-1.5}^{+1.7}) \times 10^{-5}$	S=2.5 —	DESIG=261
$N(1520)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\pi^0$	$(6.4 \pm_{-1.8}^{+2.3}) \times 10^{-6}$	—	DESIG=268
$N(1535)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\pi^0$	$(2.5 \pm 1.0) \times 10^{-5}$	—	DESIG=269
$N(1650)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\pi^0$	$(3.8 \pm_{-1.7}^{+1.4}) \times 10^{-5}$	—	DESIG=270
$N(1720)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\pi^0$	$(1.79 \pm_{-0.70}^{+0.26}) \times 10^{-5}$	—	DESIG=271
$N(2300)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\pi^0$	$(2.6 \pm_{-0.7}^{+1.2}) \times 10^{-5}$	—	DESIG=272
$N(2570)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\pi^0$	$(2.13 \pm_{-0.31}^{+0.40}) \times 10^{-5}$	—	DESIG=273
$p\bar{p}\pi^+\pi^-$	$(6.0 \pm 0.4) \times 10^{-4}$	1491	DESIG=31
$p\bar{p}K^+K^-$	$(2.7 \pm 0.7) \times 10^{-5}$	1118	DESIG=212
$p\bar{p}\eta$	$(6.0 \pm 0.4) \times 10^{-5}$	1373	DESIG=200
$N(1535)\bar{p} + \text{c.c.} \rightarrow p\bar{p}\eta$	$(4.5 \pm_{-0.6}^{+0.7}) \times 10^{-5}$	—	DESIG=264
$p\bar{p}\pi^+\pi^-\pi^0$	$(7.3 \pm 0.7) \times 10^{-4}$	1435	DESIG=211
$p\bar{p}\rho^0$	$(5.0 \pm 2.2) \times 10^{-5}$	1252	DESIG=210
$p\bar{p}\omega$	$(6.9 \pm 2.1) \times 10^{-5}$	1247	DESIG=77
$p\bar{p}\eta'$	$(1.10 \pm 0.13) \times 10^{-5}$	1141	DESIG=317
$p\bar{p}\phi$	$(6.1 \pm 0.6) \times 10^{-6}$	1109	DESIG=80
$\phi X(1835) \rightarrow p\bar{p}\phi$	$< 1.82 \times 10^{-7}$	CL=90% —	DESIG=318
$p\bar{n}\pi^- \text{ or c.c.}$	$(2.48 \pm 0.17) \times 10^{-4}$	—	DESIG=227
$p\bar{n}\pi^-\pi^0$	$(3.2 \pm 0.7) \times 10^{-4}$	1492	DESIG=228
$\Lambda\bar{\Lambda}$	$(3.81 \pm 0.13) \times 10^{-4}$	S=1.4 1467	DESIG=28
$\Lambda\bar{\Lambda}\pi^0$	$(1.4 \pm 0.7) \times 10^{-6}$	1412	DESIG=238
$\Lambda\bar{\Lambda}\eta$	$(2.43 \pm 0.32) \times 10^{-5}$	1197	DESIG=239
$\Lambda(1670)\bar{\Lambda} \rightarrow \Lambda\bar{\Lambda}\eta$	$(1.3 \pm 0.7) \times 10^{-5}$	—	DESIG=336
$\Lambda\bar{\Lambda}\eta'$	$(7.3 \pm 1.0) \times 10^{-6}$	892	DESIG=346
$\Lambda\bar{\Lambda}\omega(782)$	$(3.3 \pm 0.4) \times 10^{-5}$	1037	DESIG=340
$\Lambda\bar{\Lambda}\pi^+\pi^-$	$(2.8 \pm 0.6) \times 10^{-4}$	1346	DESIG=213
$\Lambda\bar{p}K^+$	$(1.00 \pm 0.14) \times 10^{-4}$	1327	DESIG=214
$\Lambda\bar{p}K^*(892)^+ + \text{c.c.}$	$(6.3 \pm 0.7) \times 10^{-5}$	1087	DESIG=321
$\Lambda\bar{p}K^+\pi^+\pi^-$	$(1.8 \pm 0.4) \times 10^{-4}$	1167	DESIG=215
$\bar{\Lambda}nK_S^0 + \text{c.c.}$	$(8.1 \pm 1.8) \times 10^{-5}$	1324	DESIG=237
$\Delta^{++}\bar{\Delta}^{--}$	$(1.28 \pm 0.35) \times 10^{-4}$	1371	DESIG=70
$\Lambda\bar{\Sigma}^+\pi^- + \text{c.c.}$	$(1.40 \pm 0.13) \times 10^{-4}$	1376	DESIG=280
$\Lambda\bar{\Sigma}^-\pi^+ + \text{c.c.}$	$(1.54 \pm 0.14) \times 10^{-4}$	1379	DESIG=281
$\Lambda\bar{\Sigma}^0 + \text{c.c.}$	$(1.6 \pm 0.7) \times 10^{-6}$	1437	DESIG=326
$\Sigma^0\bar{p}K^+ + \text{c.c.}$	$(1.67 \pm 0.18) \times 10^{-5}$	1291	DESIG=274
$\Sigma^+\bar{\Sigma}^-$	$(2.43 \pm 0.10) \times 10^{-4}$	S=1.4 1408	DESIG=223
$\Sigma^0\bar{\Sigma}^0$	$(2.35 \pm 0.09) \times 10^{-4}$	S=1.1 1405	DESIG=71
$\Sigma^-\bar{\Sigma}^+$	$(2.82 \pm 0.09) \times 10^{-4}$	1401	DESIG=335
$\Sigma^+\bar{\Sigma}^-\eta$	$(9.6 \pm 2.4) \times 10^{-6}$	1108	DESIG=339
$\Sigma^+\bar{\Sigma}^-\omega$	$(1.89 \pm 0.28) \times 10^{-5}$	926	DESIG=344
$\Sigma^+\bar{\Sigma}^-\phi$	$(3.0 \pm 0.7) \times 10^{-6}$	686	DESIG=345
$\Sigma(1385)^+\bar{\Sigma}(1385)^-$	$(8.5 \pm 0.7) \times 10^{-5}$	1218	DESIG=72
$\Sigma(1385)^-\bar{\Sigma}(1385)^+$	$(8.5 \pm 0.8) \times 10^{-5}$	1218	DESIG=297
$\Sigma(1385)^0\bar{\Sigma}(1385)^0$	$(6.9 \pm 0.7) \times 10^{-5}$	1218	DESIG=299
$\Xi^-\bar{\Xi}^+$	$(2.87 \pm 0.11) \times 10^{-4}$	S=1.1 1284	DESIG=29

$\Xi^0 \Xi^0$	$(2.3 \pm 0.4) \times 10^{-4}$	S=4.2	1291	DESIG=224
$\Xi(1530)^0 \Xi(1530)^0$	$(6.8 \pm 0.4) \times 10^{-5}$		1025	DESIG=73
$\Lambda \Xi^+ K^- + \text{c.c.}$	$(3.67 \pm 0.22) \times 10^{-5}$		1114	DESIG=293
$\Xi(1690)^- \Xi^+ \rightarrow K^- \Lambda \Xi^+ + \text{c.c.}$	$(6.2 \pm 2.1) \times 10^{-6}$	S=1.5	—	DESIG=294
$\Xi(1820)^- \Xi^+ \rightarrow K^- \Lambda \Xi^+ + \text{c.c.}$	$(1.48 \pm 0.29) \times 10^{-5}$	S=1.2	—	DESIG=295
$\Xi(1530)^- \Xi(1530)^+$	$(1.15 \pm 0.07) \times 10^{-4}$		1025	DESIG=322
$\Xi(1530)^- \Xi^+$	$(7.0 \pm 1.2) \times 10^{-6}$		1165	DESIG=323
$\Xi(1530)^0 \Xi^0$	$(5.3 \pm 0.5) \times 10^{-6}$		1169	DESIG=331
$\Sigma^0 \Xi^+ K^- + \text{c.c.}$	$(3.7 \pm 0.4) \times 10^{-5}$		1060	DESIG=296
$\Omega^- K^+ \Xi^0 + \text{c.c.}$	$(2.8 \pm 0.4) \times 10^{-6}$		606	DESIG=355
$\Omega^- \Omega^+$	$(5.66 \pm 0.30) \times 10^{-5}$	S=1.3	774	DESIG=74
$\eta_c \pi^+ \pi^- \pi^0$	$< 1.0 \times 10^{-3}$	CL=90%	512	DESIG=229
$h_c(1P) \pi^0$	$(7.4 \pm 0.5) \times 10^{-4}$		85	DESIG=254
$\Lambda_c^+ \bar{p} e^+ e^- + \text{c.c.}$	$< 1.7 \times 10^{-6}$	CL=90%	830	DESIG=310
$\Theta(1540) \bar{\Theta}(1540) \rightarrow K_S^0 p K^- \bar{n} + \text{c.c.}$	$[c] < 8.8 \times 10^{-6}$	CL=90%	—	DESIG=195
$\Theta(1540) K^- \bar{n} \rightarrow K_S^0 p K^- \bar{n}$	$[c] < 1.0 \times 10^{-5}$	CL=90%	—	DESIG=196
$\Theta(1540) K_S^0 \bar{p} \rightarrow K_S^0 \bar{p} K^+ n$	$[c] < 7.0 \times 10^{-6}$	CL=90%	—	DESIG=197
$\bar{\Theta}(1540) K^+ n \rightarrow K_S^0 \bar{p} K^+ n$	$[c] < 2.6 \times 10^{-5}$	CL=90%	—	DESIG=198
$\bar{\Theta}(1540) K_S^0 p \rightarrow K_S^0 p K^- \bar{n}$	$[c] < 6.0 \times 10^{-6}$	CL=90%	—	DESIG=199

Radiative decays

NODE=M071;CLUMP=C

$\gamma \chi_{c0}(1P)$	$(9.75 \pm 0.22) \%$	S=1.1	261	DESIG=56
$\gamma \chi_{c1}(1P)$	$(9.75 \pm 0.27) \%$	S=1.1	171	DESIG=58
$\gamma \chi_{c2}(1P)$	$(9.38 \pm 0.23) \%$	S=1.2	128	DESIG=59
$\gamma \eta_c(1S)$	$(3.6 \pm 0.5) \times 10^{-3}$	S=1.3	635	DESIG=61
$\gamma \eta_c(2S)$	$(5.4 \pm 3.4_{-2.9}) \times 10^{-4}$		48	DESIG=63
$\gamma 2(\pi^+ \pi^-)$	$(4.0 \pm 0.6) \times 10^{-4}$		1817	DESIG=241
$\gamma 3(\pi^+ \pi^-)$	$< 1.7 \times 10^{-4}$	CL=90%	1774	DESIG=249
$\gamma \eta'(958)$	$(1.24 \pm 0.04) \times 10^{-4}$		1719	DESIG=54
$\gamma f_2(1270)$	$(2.73 \pm 0.29_{-0.25}) \times 10^{-4}$	S=1.8	1622	DESIG=82
$\gamma f_0(1370) \rightarrow \gamma K \bar{K}$	$(3.1 \pm 1.7) \times 10^{-5}$		1588	DESIG=286
$\gamma f_0(1500)$	$(9.3 \pm 1.9) \times 10^{-5}$		1529	DESIG=287
$\gamma f_2'(1525)$	$(3.3 \pm 0.8) \times 10^{-5}$		1531	DESIG=288
$\gamma f_0(1710)$	seen		1436	DESIG=236;OUR EST;→ UNCHECKED ←
$\gamma f_0(1710) \rightarrow \gamma \pi \pi$	$(3.5 \pm 0.6) \times 10^{-5}$		—	DESIG=83
$\gamma f_0(1710) \rightarrow \gamma K \bar{K}$	$(6.6 \pm 0.7) \times 10^{-5}$		—	DESIG=84
$\gamma f_0(2100) \rightarrow \gamma \pi \pi$	$(4.8 \pm 1.0) \times 10^{-6}$		1244	DESIG=289
$\gamma f_0(2200) \rightarrow \gamma K \bar{K}$	$(3.2 \pm 1.0) \times 10^{-6}$		1193	DESIG=290
$\gamma f_J(2220) \rightarrow \gamma \pi \pi$	$< 5.8 \times 10^{-6}$	CL=90%	1168	DESIG=291
$\gamma f_J(2220) \rightarrow \gamma K \bar{K}$	$< 9.5 \times 10^{-6}$	CL=90%	1168	DESIG=292
$\gamma \eta$	$(9.2 \pm 1.8) \times 10^{-7}$		1802	DESIG=53
$\gamma \eta \pi^+ \pi^-$	$(8.7 \pm 2.1) \times 10^{-4}$		1791	DESIG=230
$\gamma \eta(1405)$	seen		1574	DESIG=231;OUR EST;→ UNCHECKED ←
$\gamma \eta(1405) \rightarrow \gamma K \bar{K} \pi$	$< 9 \times 10^{-5}$	CL=90%	1569	DESIG=62
$\gamma \eta(1405) \rightarrow \gamma \eta \pi^+ \pi^-$	$(3.6 \pm 2.5) \times 10^{-5}$		—	DESIG=232
$\gamma \eta(1405) \rightarrow \gamma f_0(980) \pi^0 \rightarrow \gamma \pi^+ \pi^- \pi^0$	$< 5.0 \times 10^{-7}$	CL=90%	—	DESIG=308
$\gamma \eta(1475)$	seen		1548	DESIG=233;OUR EST;→ UNCHECKED ←
$\gamma \eta(1475) \rightarrow \gamma K \bar{K} \pi$	$< 1.4 \times 10^{-4}$	CL=90%	—	DESIG=234
$\gamma \eta(1475) \rightarrow \gamma \eta \pi^+ \pi^-$	$< 8.8 \times 10^{-5}$	CL=90%	—	DESIG=235
$\gamma K^{*0} K^+ \pi^- + \text{c.c.}$	$(3.7 \pm 0.9) \times 10^{-4}$		1674	DESIG=242
$\gamma K^{*0} \bar{K}^0$	$(2.4 \pm 0.7) \times 10^{-4}$		1613	DESIG=243
$\gamma K_S^0 K^+ \pi^- + \text{c.c.}$	$(2.6 \pm 0.5) \times 10^{-4}$		1753	DESIG=244

$\gamma K^+ K^- \pi^+ \pi^-$	$(1.9 \pm 0.5) \times 10^{-4}$	1726	DESIG=245
$\gamma K^+ K^- 2(\pi^+ \pi^-)$	$< 2.2 \times 10^{-4}$	CL=90% 1654	DESIG=248
$\gamma 2(K^+ K^-)$	$< 4 \times 10^{-5}$	CL=90% 1499	DESIG=250
$\gamma p \bar{p}$	$(3.9 \pm 0.5) \times 10^{-5}$	S=2.0 1586	DESIG=246
$\gamma f_2(1950) \rightarrow \gamma p \bar{p}$	$(1.20 \pm 0.22) \times 10^{-5}$	—	DESIG=257
$\gamma f_2(2150) \rightarrow \gamma p \bar{p}$	$(7.2 \pm 1.8) \times 10^{-6}$	—	DESIG=258
$\gamma X(1835) \rightarrow \gamma p \bar{p}$	$(4.6 \pm_{-4.0}^{+1.8}) \times 10^{-6}$	—	DESIG=259
$\gamma X \rightarrow \gamma p \bar{p}$	$[h] < 2 \times 10^{-6}$	CL=90% —	DESIG=260
$\gamma p \bar{p} \pi^+ \pi^-$	$(2.8 \pm 1.4) \times 10^{-5}$	1491	DESIG=247
$\gamma \gamma$	$< 1.5 \times 10^{-4}$	CL=90% 1843	DESIG=51
$\gamma \gamma J/\psi$	$(3.1 \pm_{-1.2}^{+1.0}) \times 10^{-4}$	542	DESIG=266
$e^+ e^- \eta'$	$(1.90 \pm 0.26) \times 10^{-6}$	1719	DESIG=311
$e^+ e^- \eta_c(1S)$	$(3.8 \pm 0.4) \times 10^{-5}$	635	DESIG=338
$e^+ e^- \chi_{c0}(1P)$	$(1.05 \pm 0.25) \times 10^{-3}$	261	DESIG=300
$e^+ e^- \chi_{c1}(1P)$	$(8.5 \pm 0.7) \times 10^{-4}$	171	DESIG=301
$e^+ e^- \chi_{c2}(1P)$	$(6.8 \pm 0.8) \times 10^{-4}$	128	DESIG=302

Weak decays

$D^0 e^+ e^- + \text{c.c.}$	$< 1.4 \times 10^{-7}$	CL=90% 1371	NODE=M071;CLUMP=E DESIG=306
$\Lambda_c^+ \bar{\Sigma}^- + \text{c.c.}$	$< 1.4 \times 10^{-5}$	CL=90% 586	DESIG=337

Other decays

invisible	$< 1.6 \%$	CL=90% —	NODE=M071;CLUMP=D DESIG=275
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 $\psi(3770)$

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

Mass $m = 3773.7 \pm 0.7$ MeV (S = 2.3)Full width $\Gamma = 27.2 \pm 1.0$ MeV

NODE=M053

NODE=M053M;DTYPE=M

NODE=M053W;DTYPE=G

$\psi(3770)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
$D \bar{D}$	$(93 \pm_{-9}^{+8}) \%$	S=2.0	287
$D^0 \bar{D}^0$	$(52 \pm_{-5}^{+4}) \%$	S=2.0	287
$D^+ D^-$	$(41 \pm 4) \%$	S=2.0	254
$J/\psi X$	$(5.0 \pm 2.2) \times 10^{-3}$	—	—
$J/\psi \pi^+ \pi^-$	$(1.93 \pm 0.28) \times 10^{-3}$	—	561
$J/\psi \pi^0 \pi^0$	$(8.0 \pm 3.0) \times 10^{-4}$	—	565
$J/\psi \eta$	$(8.7 \pm 1.2) \times 10^{-4}$	—	361
$J/\psi \pi^0$	$< 2.8 \times 10^{-4}$	CL=90%	604
$e^+ e^-$	$(9.6 \pm 0.7) \times 10^{-6}$	S=1.3	1887

NODE=M053220;DESIG=2

DESIG=5

DESIG=6

DESIG=235

DESIG=4

DESIG=46

DESIG=47

DESIG=48

DESIG=1

Decays to light hadrons

$b_1(1235) \pi$	$< 1.4 \times 10^{-5}$	CL=90%	1684	NODE=M053;CLUMP=H DESIG=20
$\phi \eta'$	$< 2.3 \times 10^{-5}$	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%	1805	DESIG=10
$K^+ K^-$	not seen	—	1821	DESIG=234;OUR EST;→ UNCHECKED ←
$K^*(892)^+ K^- + \text{c.c.}$	$< 1.4 \times 10^{-5}$	CL=90%	1745	DESIG=19
$K^*(892)^0 \bar{K}^0 + \text{c.c.}$	$< 1.2 \times 10^{-3}$	CL=90%	1745	DESIG=18
$K_S^0 K_L^0$	$(2.6 \pm_{-1.6}^{+1.4}) \times 10^{-5}$	—	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%	1844	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	$\times 10^{-3}$	CL=90%	1820	DESIG=52
$3(\pi^+\pi^-\pi^0)$	< 1.37	%	CL=90%	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
$\eta3\pi$	< 1.34	$\times 10^{-3}$	CL=90%	1824	DESIG=25
$\eta2(\pi^+\pi^-)$	< 2.43	%	CL=90%	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%	1741	DESIG=26
$K^+K^-\pi^+\pi^-$	< 9.0	$\times 10^{-4}$	CL=90%	1773	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%	1623	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%	1723	DESIG=69
$K^{*0}K^-\pi^+\pi^0 + \text{c.c.}$	< 1.62	%	CL=90%	1694	DESIG=70
$K^{*+}K^-\pi^+\pi^- + \text{c.c.}$	< 3.23	%	CL=90%	1693	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%	1661	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%	1666	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%	1494	DESIG=35
$2(K^+K^-)\pi^+\pi^-$	< 3.2	$\times 10^{-3}$	CL=90%	1426	DESIG=59
$K_S^0 K^-\pi^+$	< 3.2	$\times 10^{-3}$	CL=90%	1799	DESIG=200
$K_S^0 K^-\pi^+\pi^0$	< 1.33	%	CL=90%	1773	DESIG=201
$K_S^0 K^-\rho^+$	< 6.6	$\times 10^{-3}$	CL=90%	1665	DESIG=214
$K_S^0 K^-2\pi^+\pi^-$	< 8.7	$\times 10^{-3}$	CL=90%	1740	DESIG=202
$K_S^0 K^-\pi^+\rho^0$	< 1.6	%	CL=90%	1621	DESIG=215
$K_S^0 K^-\pi^+\eta$	< 1.3	%	CL=90%	1670	DESIG=216
$K_S^0 K^-2\pi^+\pi^-\pi^0$	< 4.18	%	CL=90%	1703	DESIG=203
$K_S^0 K^-2\pi^+\pi^-\eta$	< 4.8	%	CL=90%	1570	DESIG=217
$K_S^0 K^-\pi^+2(\pi^+\pi^-)$	< 1.22	%	CL=90%	1658	DESIG=204
$K_S^0 K^-\pi^+2\pi^0$	< 2.65	%	CL=90%	1742	DESIG=205
$K_S^0 K^-K^+K^-\pi^+$	< 4.9	$\times 10^{-3}$	CL=90%	1491	DESIG=218
$K_S^0 K^-K^+K^-\pi^+\pi^0$	< 3.0	%	CL=90%	1427	DESIG=219
$K_S^0 K^-K^+K^-\pi^+\eta$	< 2.2	%	CL=90%	1214	DESIG=220
$K^{*0}K^-\pi^+ + \text{c.c.}$	< 9.7	$\times 10^{-3}$	CL=90%	1722	DESIG=60
$p\bar{p}$	not seen			1637	DESIG=233;OUR EST;→ UNCHECKED ←
$p\bar{p}\pi^0$	< 4	$\times 10^{-5}$	CL=90%	1595	DESIG=54
$p\bar{p}\pi^+\pi^-$	< 5.8	$\times 10^{-4}$	CL=90%	1544	DESIG=36
$\Lambda\bar{\Lambda}$	< 1.2	$\times 10^{-4}$	CL=90%	1522	DESIG=42
$p\bar{p}\pi^+\pi^-\pi^0$	< 1.85	$\times 10^{-3}$	CL=90%	1490	DESIG=37
$\omega p\bar{p}$	< 2.9	$\times 10^{-4}$	CL=90%	1310	DESIG=39
$\Lambda\bar{\Lambda}\pi^0$	< 7	$\times 10^{-5}$	CL=90%	1469	DESIG=72
$p\bar{p}2(\pi^+\pi^-)$	< 2.6	$\times 10^{-3}$	CL=90%	1426	DESIG=61

$\eta p \bar{p}$	$< 5.4 \times 10^{-4}$	CL=90%	1431	DESIG=38
$\eta p \bar{p} \pi^+ \pi^-$	$< 3.3 \times 10^{-3}$	CL=90%	1284	DESIG=223
$\rho^0 p \bar{p}$	$< 1.7 \times 10^{-3}$	CL=90%	1314	DESIG=66
$p \bar{p} K^+ K^-$	$< 3.2 \times 10^{-4}$	CL=90%	1186	DESIG=40
$\eta p \bar{p} K^+ K^-$	$< 6.9 \times 10^{-3}$	CL=90%	737	DESIG=224
$\pi^0 p \bar{p} K^+ K^-$	$< 1.2 \times 10^{-3}$	CL=90%	1094	DESIG=225
$\phi p \bar{p}$	$< 1.3 \times 10^{-4}$	CL=90%	1178	DESIG=41
$\Lambda \bar{\Lambda} \pi^+ \pi^-$	$< 2.5 \times 10^{-4}$	CL=90%	1405	DESIG=43
$\Lambda \bar{p} K^+$	$< 2.8 \times 10^{-4}$	CL=90%	1387	DESIG=44
$\Lambda \bar{p} K^+ \pi^+ \pi^-$	$< 6.3 \times 10^{-4}$	CL=90%	1234	DESIG=45
$\Lambda \bar{\Lambda} \eta$	$< 1.9 \times 10^{-4}$	CL=90%	1263	DESIG=226
$\Sigma^+ \bar{\Sigma}^-$	$< 1.0 \times 10^{-4}$	CL=90%	1465	DESIG=227
$\Sigma^0 \bar{\Sigma}^0$	$< 4 \times 10^{-5}$	CL=90%	1462	DESIG=228
$\Xi^0 \bar{\Xi}^0$	$< 3.4 \times 10^{-4}$	CL=90%	1353	DESIG=230
$\Xi^- \bar{\Xi}^+$	$(1.4 \pm 0.4) \times 10^{-4}$		1347	DESIG=236
$\Lambda \bar{\Xi}^+ K^- + \text{c.c.}$	$< 1.0 \times 10^{-4}$	CL=90%	1185	DESIG=237
$\Sigma^0 \bar{\Xi}^+ K^- + \text{c.c.}$	$< 3.4 \times 10^{-4}$	CL=90%	1134	DESIG=238

Radiative decays

$\gamma \chi_{c2}$	$< 6.4 \times 10^{-4}$	CL=90%	211	NODE=M053;CLUMP=R DESIG=51
$\gamma \chi_{c1}$	$(2.49 \pm 0.23) \times 10^{-3}$		254	DESIG=50
$\gamma \chi_{c0}$	$(6.9 \pm 0.6) \times 10^{-3}$		342	DESIG=49
$\gamma \eta_c$	$< 7 \times 10^{-4}$	CL=90%	707	DESIG=231
$\gamma \eta_c(2S)$	$< 9 \times 10^{-4}$	CL=90%	133	DESIG=232
$\gamma \eta'$	$< 1.8 \times 10^{-4}$	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

 $\psi_2(3823)$

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

I, J, P need confirmation.

was $\psi(3823)$, $X(3823)$ Mass $m = 3823.51 \pm 0.34$ MeVFull width $\Gamma < 2.9$ MeV, CL = 90%Branching fractions are given relative to the one **DEFINED AS 1**.

NODE=M212

NODE=M212M;DTYPE=M

NODE=M212W;DTYPE=G

NODE=M212215;NODE=M212

$\psi_2(3823)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	$\frac{p}{\text{MeV}/c}$
$J/\psi(1S) \pi^+ \pi^-$	< 0.06	90%	607
$J/\psi(1S) \pi^0 \pi^0$	< 0.11	90%	610
$J/\psi(1S) \pi^0$	< 0.030	90%	646
$J/\psi(1S) \eta$	< 0.14	90%	431
$\chi_{c0} \gamma$	< 0.24	90%	387
$\chi_{c1} \gamma$	DEFINED AS 1		300
$\chi_{c2} \gamma$	$0.28^{+0.14}_{-0.11}$		258

 $\psi_3(3842)$

$$I^G(J^{PC}) = 0^-(3^--)$$

J, P need confirmation.

Mass $m = 3842.71 \pm 0.20$ MeVFull width $\Gamma = 2.8 \pm 0.6$ MeV

NODE=M241

NODE=M241M;DTYPE=M

NODE=M241W;DTYPE=G

$\psi_3(3842)$ DECAY MODES

	Fraction (Γ_i/Γ)	p (MeV/c)
$D^+ D^-$	seen	443
$D^0 \bar{D}^0$	seen	463

NODE=M241215;DESIG=1
DESIG=2

 $\chi_{c1}(3872)$

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

NODE=M176

also known as $X(3872)$

$$\text{Mass } m = 3871.64 \pm 0.06 \text{ MeV}$$

NODE=M176M;DTYPE=M

$$m_{\chi_{c1}(3872)} - m_{J/\psi} = 775 \pm 4 \text{ MeV}$$

NODE=M176DM;DTYPE=D

$$\text{Full width } \Gamma = 1.19 \pm 0.21 \text{ MeV} \quad (S = 1.1)$$

NODE=M176W;DTYPE=G

 $\chi_{c1}(3872)$ DECAY MODES

	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
$e^+ e^-$	$< 2.7 \times 10^{-7}$	90%	1936
$\pi^+ \pi^- \pi^0$	$< 1.0 \%$	90%	1924
$\pi^+ \pi^- J/\psi(1S)$	$(4.3 \pm 1.4) \%$		650
$\pi^+ \pi^- \pi^0 J/\psi(1S)$	not seen		588
$\omega \eta_c(1S)$	$< 40 \%$	90%	368
$\rho(770)^0 J/\psi(1S)$	$(3.4 \pm 1.1) \%$		—
$\omega J/\psi(1S)$	$(5.0 \pm 1.9) \%$		†
$\phi \phi$	not seen		1646
$D^0 \bar{D}^0 \pi^0$	$(55 \pm 28) \%$		116
$\bar{D}^{*0} D^0$	$(46 \pm 16) \%$		†
$\gamma \gamma$	$< 13 \%$	90%	1936
$D^0 \bar{D}^0$	$< 32 \%$	90%	519
$D^+ D^-$	$< 22 \%$	90%	502
$\pi^0 \chi_{c2}$	$< 5 \%$	90%	273
$\pi^0 \chi_{c1}$	$(3.8^{+1.9}_{-1.7}) \%$		319
$\pi^0 \chi_{c0}$	$< 16 \%$	90%	411
$\pi^+ \pi^- \eta_c(1S)$	$< 16 \%$	90%	745
$\pi^0 \pi^0 \chi_{c0}$	$< 7 \%$	90%	347
$\pi^0 \pi^0 \chi_{c1}$	$< 5 \%$	90%	228
$\pi^0 \pi^0 \chi_{c2}$	$< 2.2 \%$	90%	156
$\pi^+ \pi^- \chi_{c0}$	$< 2.4 \%$	90%	340
$\pi^+ \pi^- \chi_{c1}$	$< 8 \times 10^{-3}$	90%	218
$p \bar{p}$	$< 2.7 \times 10^{-5}$	95%	1693
$\pi^+ \pi^- \eta$	$< 5 \times 10^{-3}$	90%	1887

NODE=M176215;DESIG=1

DESIG=29

DESIG=2

DESIG=25

DESIG=24

DESIG=32

DESIG=13

DESIG=26

DESIG=8

DESIG=12

DESIG=5

DESIG=6

DESIG=7

DESIG=20

DESIG=18

DESIG=19

DESIG=14

DESIG=28

DESIG=36

DESIG=37

DESIG=27

DESIG=17

DESIG=16

DESIG=34

Radiative decays

$\gamma D^+ D^-$	$< 4 \%$	90%	502
$\gamma \bar{D}^0 D^0$	$< 7 \%$	90%	519
$\gamma J/\psi$	$(10 \pm 4) \times 10^{-3}$		697
$\gamma \chi_{c1}$	$< 1.0 \%$	90%	344
$\gamma \chi_{c2}$	$< 4 \%$	90%	303
$\gamma \psi(2S)$	possibly seen		181
$\gamma \psi_2(3823)$	$< 3.3 \times 10^{-3}$	90%	48

NODE=M176;CLUMP=B

DESIG=21

DESIG=23

DESIG=9

DESIG=3

DESIG=15

DESIG=11

DESIG=35

C-violating decays

$\eta J/\psi$	$< 2.1 \%$	90%	491
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NODE=M176;CLUMP=A

DESIG=4

 $\chi_{c0}(3915)$

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

NODE=M159

was $X(3915)$

$$\text{Mass } m = 3922.1 \pm 1.8 \text{ MeV} \quad (S = 1.5)$$

NODE=M159M;DTYPE=M

$$\text{Full width } \Gamma = 20 \pm 4 \text{ MeV} \quad (S = 1.1)$$

NODE=M159W;DTYPE=G

$\chi_{c0}(3915)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\omega J/\psi$	seen	232
$\bar{D}^{*0} D^0$	not seen	313
$D^+ D^-$	seen	592
$D_s^+ D_s^-$	seen	†
$\pi^+ \pi^- \eta_c(1S)$	not seen	788
$\eta_c \eta$	not seen	668
$\eta_c \pi^0$	not seen	817
$K \bar{K}$	not seen	1898
$\gamma \gamma$	seen	1961
$\gamma \psi(2S)$	not seen	229
$\pi^0 \chi_{c1}$	not seen	368

NODE=M159215;DESIG=1;OUR EST;
→ UNCHECKED ←
DESIG=3;OUR EVAL;→ UNCHECKED ←
DESIG=9
DESIG=11;OUR EST;→ UNCHECKED ←
DESIG=4;OUR EVAL;→ UNCHECKED ←
DESIG=6
DESIG=7
DESIG=5;OUR EVAL;→ UNCHECKED ←
DESIG=2
DESIG=10;OUR EST;→ UNCHECKED ←
DESIG=8

$\chi_{c2}(3930)$

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

Mass $m = 3922.5 \pm 1.0$ MeV ($S = 1.7$)

Full width $\Gamma = 35.2 \pm 2.2$ MeV ($S = 1.2$)

NODE=M050
NODE=M050M;DTYPE=M
NODE=M050W;DTYPE=G

$\chi_{c2}(3930)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\gamma \gamma$	seen	1961
$K \bar{K} \pi$	not seen	1878
$K^+ K^- \pi^+ \pi^- \pi^0$	not seen	1822
$D \bar{D}$	seen	607
$D^+ D^-$	seen	592
$D^0 \bar{D}^0$	seen	607
$\pi^+ \pi^- \eta_c(1S)$	not seen	788
$K \bar{K}$	not seen	1898

NODE=M050215;DESIG=1;OUR EVAL;
→ UNCHECKED ←
DESIG=5;OUR EVAL;→ UNCHECKED ←
DESIG=6;OUR EVAL;→ UNCHECKED ←
DESIG=2;OUR EVAL;→ UNCHECKED ←
DESIG=3;OUR EVAL;→ UNCHECKED ←
DESIG=4;OUR EVAL;→ UNCHECKED ←
DESIG=7;OUR EVAL;→ UNCHECKED ←
DESIG=8;OUR EVAL;→ UNCHECKED ←

$\psi(4040)$ ^[i]

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

Mass $m = 4040 \pm 4$ MeV

Full width $\Gamma = 84 \pm 12$ MeV

NODE=M072
NODE=M072M;DTYPE=M
NODE=M072W;DTYPE=G

Due to the complexity of the $c\bar{c}$ 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

$\psi(4040)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	P (MeV/c)	
e^+e^-	$(1.02 \pm 0.17) \times 10^{-5}$		2020	DESIG=5
$D\bar{D}$	seen		776	DESIG=17;OUR EST;→ UNCHECKED ←
$D^0\bar{D}^0$	seen		776	DESIG=1
D^+D^-	seen		764	DESIG=18
$D^*\bar{D}^* + \text{c.c.}$	seen		570	DESIG=19;OUR EST;→ UNCHECKED ←
$D^*(2007)^0\bar{D}^0 + \text{c.c.}$	seen		576	DESIG=2
$D^*(2010)^+D^- + \text{c.c.}$	seen		562	DESIG=20
$D^*\bar{D}^*$	seen		196	DESIG=21;OUR EST;→ UNCHECKED ←
$D^*(2007)^0\bar{D}^*(2007)^0$	seen		228	DESIG=3
$D^*(2010)^+D^*(2010)^-$	seen		196	DESIG=22
$D\bar{D}\pi$ (excl. $D^*\bar{D}$)	not seen		—	DESIG=23;OUR EST;→ UNCHECKED ←
$D^0D^-\pi^+ + \text{c.c.}$ (excl. $D^*(2010)^+D^- + \text{c.c.}$)	not seen		—	DESIG=24
$D\bar{D}^*\pi$ (excl. $D^*\bar{D}^*$)	not seen		—	DESIG=25
$D^0\bar{D}^{*-}\pi^+ + \text{c.c.}$ (excl. $D^*(2010)^+D^*(2010)^-$)	seen		—	DESIG=26
$D_s^+D_s^-$	seen		453	DESIG=27
$\pi^+\pi^+\pi^-\pi^-\pi^0$	seen		1979	DESIG=37;OUR EST;→ UNCHECKED ←
$J/\psi(1S)$ hadrons	seen		—	DESIG=4;OUR EST;→ UNCHECKED ←
$J/\psi\pi^+\pi^-$	$< 4 \times 10^{-3}$	90%	795	DESIG=7
$J/\psi\pi^0\pi^0$	$< 2 \times 10^{-3}$	90%	797	DESIG=8
$J/\psi\eta$	$(5.2 \pm 0.7) \times 10^{-3}$		676	DESIG=9
$J/\psi\pi^0$	$< 2.8 \times 10^{-4}$	90%	824	DESIG=10
$J/\psi\pi^+\pi^-\pi^0$	$< 2 \times 10^{-3}$	90%	747	DESIG=11
$\chi_{c1}\gamma$	$< 3.4 \times 10^{-3}$	90%	494	DESIG=12
$\chi_{c2}\gamma$	$< 5 \times 10^{-3}$	90%	455	DESIG=13
$\chi_{c1}\pi^+\pi^-\pi^0$	$< 1.1 \%$	90%	307	DESIG=14
$\chi_{c2}\pi^+\pi^-\pi^0$	$< 3.2 \%$	90%	234	DESIG=15
$h_c(1P)\pi^+\pi^-$	$< 3 \times 10^{-3}$	90%	404	DESIG=28
$\phi\pi^+\pi^-$	$< 3 \times 10^{-3}$	90%	1880	DESIG=16
$\Lambda\bar{\Lambda}\pi^+\pi^-$	$< 2.9 \times 10^{-4}$	90%	1579	DESIG=29
$\Lambda\bar{\Lambda}\pi^0$	$< 9 \times 10^{-5}$	90%	1636	DESIG=30
$\Lambda\bar{\Lambda}\eta$	$< 3.0 \times 10^{-4}$	90%	1452	DESIG=31
$\Lambda\bar{\Lambda}$	$< 6 \times 10^{-6}$	90%	1684	DESIG=36
$\Sigma^+\bar{\Sigma}^-$	$< 1.3 \times 10^{-4}$	90%	1632	DESIG=32
$\Sigma^0\bar{\Sigma}^0$	$< 7 \times 10^{-5}$	90%	1630	DESIG=33
$\Xi^+\bar{\Xi}^-$	$< 1.6 \times 10^{-4}$	90%	1527	DESIG=34
$\Xi^0\bar{\Xi}^0$	$< 1.8 \times 10^{-4}$	90%	1533	DESIG=35
$\Xi^-\bar{\Xi}^+$	$< 6 \times 10^{-5}$	90%	1527	DESIG=38
$\Lambda\bar{\Xi}^+K^- + \text{c.c.}$	$< 7 \times 10^{-5}$	90%	1386	DESIG=39
$\Sigma^0\bar{\Xi}^+K^- + \text{c.c.}$	$< 1.5 \times 10^{-5}$	90%	1343	DESIG=40
$\mu^+\mu^-$	$(9 \pm 6) \times 10^{-6}$		2017	DESIG=6

 $\chi_{c1}(4140)$

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

NODE=M193

was $X(4140)$

$$\text{Mass } m = 4146.5 \pm 3.0 \text{ MeV} \quad (S = 1.3)$$

$$\text{Full width } \Gamma = 19^{+7}_{-5} \text{ MeV}$$

NODE=M193M;DTYPE=M

NODE=M193W;DTYPE=G

$\chi_{c1}(4140)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$J/\psi\phi$	seen	216
$\gamma\gamma$	not seen	2073

NODE=M193215;DESIG=1
DESIG=2

$\psi(4160)$ [1]

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

Mass $m = 4191 \pm 5$ MeV

Full width $\Gamma = 69 \pm 10$ MeV

NODE=M025
NODE=M025M;DTYPE=M
NODE=M025W;DTYPE=G
NODE=M025215;NODE=M025

Due to the complexity of the $c\bar{c}$ 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.

$\psi(4160)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
e^+e^-	$(6.9 \pm 3.3) \times 10^{-6}$		2096
$\mu^+\mu^-$	seen		2093
$D\bar{D}$	seen		956
$D^0\bar{D}^0$	seen		956
D^+D^-	seen		947
$D^*\bar{D} + \text{c.c.}$	seen		798
$D^*(2007)^0\bar{D}^0 + \text{c.c.}$	seen		802
$D^*(2010)^+D^- + \text{c.c.}$	seen		792
$D^*\bar{D}^*$	seen		592
$D^*(2007)^0\bar{D}^*(2007)^0$	seen		604
$D^*(2010)^+D^*(2010)^-$	seen		592
$D^0D^-\pi^+ + \text{c.c. (excl. } D^*(2010)^+D^- + \text{c.c.)}$	not seen		—
$D\bar{D}^*\pi + \text{c.c. (excl. } D^*\bar{D}^*)$	seen		—
$D^0D^*\pi^+ + \text{c.c. (excl. } D^*(2010)^+D^*(2010)^-)$	not seen		—
$D_s^+D_s^-$	not seen		719
$D_s^{*+}D_s^- + \text{c.c.}$	seen		478
$J/\psi\pi^+\pi^-$	$< 3 \times 10^{-3}$	90%	919
$J/\psi\pi^0\pi^0$	$< 3 \times 10^{-3}$	90%	921
$J/\psi K^+K^-$	$< 2 \times 10^{-3}$	90%	407
$J/\psi\eta$	$< 8 \times 10^{-3}$	90%	821
$J/\psi\pi^0$	$< 1 \times 10^{-3}$	90%	944
$J/\psi\eta'$	$< 5 \times 10^{-3}$	90%	456
$J/\psi\pi^+\pi^-\pi^0$	$< 1 \times 10^{-3}$	90%	879
$\psi(2S)\pi^+\pi^-$	$< 4 \times 10^{-3}$	90%	395
$\chi_{c1}\gamma$	$< 5 \times 10^{-3}$	90%	625
$\chi_{c2}\gamma$	$< 1.3 \%$	90%	587
$\chi_{c1}\pi^+\pi^-\pi^0$	$< 2 \times 10^{-3}$	90%	496
$\chi_{c2}\pi^+\pi^-\pi^0$	$< 8 \times 10^{-3}$	90%	444
$h_c(1P)\pi^+\pi^-$	$< 5 \times 10^{-3}$	90%	556
$h_c(1P)\pi^0\pi^0$	$< 2 \times 10^{-3}$	90%	560
$h_c(1P)\eta$	$< 2 \times 10^{-3}$	90%	348
$h_c(1P)\pi^0$	$< 4 \times 10^{-4}$	90%	600
$\omega\pi^+\pi^-$	seen		2013
$\phi\pi^+\pi^-$	$< 2 \times 10^{-3}$	90%	1961
$\gamma\chi_{c1}(3872)$	$< 1.6 \times 10^{-3}$	90%	307
$\gamma\chi_{c0}(3915) \rightarrow \gamma J/\psi\pi^+\pi^-$	$< 1.36 \times 10^{-4}$	90%	—
$\gamma X(3930) \rightarrow \gamma J/\psi\pi^+\pi^-$	$< 1.18 \times 10^{-4}$	90%	—
$\gamma X(3940) \rightarrow \gamma J/\psi\pi^+\pi^-$	$< 1.47 \times 10^{-4}$	90%	—
$\gamma\chi_{c0}(3915) \rightarrow \gamma\gamma J/\psi$	$< 1.26 \times 10^{-4}$	90%	—

DESIG=1
DESIG=33
DESIG=15;OUR EVAL;→ UNCHECKED ←
DESIG=16
DESIG=17
DESIG=18;OUR EVAL;→ UNCHECKED ←
DESIG=19
DESIG=20
DESIG=21;OUR EVAL;→ UNCHECKED ←
DESIG=22
DESIG=23
DESIG=24
DESIG=25
DESIG=26
DESIG=27
DESIG=28
DESIG=2
DESIG=3
DESIG=4
DESIG=5
DESIG=6
DESIG=7
DESIG=8
DESIG=9
DESIG=10
DESIG=11
DESIG=12
DESIG=13
DESIG=29
DESIG=30
DESIG=31
DESIG=32
DESIG=49;OUR EVAL;→ UNCHECKED ←
DESIG=14
DESIG=44
DESIG=35
DESIG=36
DESIG=37
DESIG=39

$\gamma X(3930) \rightarrow \gamma \gamma J/\psi$	$< 8.8 \times 10^{-5}$	90%	—	DESIG=40
$\gamma X(3940) \rightarrow \gamma \gamma J/\psi$	$< 1.79 \times 10^{-4}$	90%	—	DESIG=41
$\omega \pi^0$	not seen		2020	DESIG=47
$\omega \eta$	not seen		1984	DESIG=48
$K^+ K^-$	not seen		2037	DESIG=42;OUR EVAL;→ UNCHECKED ←
$K_S^0 K^\pm \pi^\mp$	seen		2017	DESIG=43;OUR EVAL;→ UNCHECKED ←
$p \bar{p} p \bar{p}$	not seen		834	DESIG=45
$\Lambda \bar{\Lambda}$	$< 1.5 \times 10^{-6}$	90%	1774	DESIG=46
$\Sigma^+ \bar{\Sigma}^-$	$< 2.0 \times 10^{-4}$	90%	1725	DESIG=52
$\Xi^0 \bar{\Xi}^0$	$< 1.4 \times 10^{-4}$	90%	1632	DESIG=55
$\Xi^- \bar{\Xi}^+$	$< 8 \times 10^{-5}$	90%	1626	DESIG=50
$p K^- \bar{\Lambda} + \text{c.c.}$	$< 6 \times 10^{-6}$	90%	1659	DESIG=51
$\Lambda \bar{\Xi}^+ K^- + \text{c.c.}$	seen		1494	DESIG=53;OUR EVAL;→ UNCHECKED ←
$\Sigma^0 \bar{\Xi}^+ K^- + \text{c.c.}$	$< 3.1 \times 10^{-6}$	90%	1454	DESIG=54

 $\psi(4230)$

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

NODE=M074

also known as $Y(4230)$; was $\psi(4260)$

$$\text{Mass } m = 4222.2 \pm 2.4 \text{ MeV} \quad (S = 1.7)$$

$$\text{Full width } \Gamma = 51 \pm 8 \text{ MeV} \quad (S = 3.7)$$

NODE=M074M;DTYPE=M

NODE=M074W;DTYPE=G

$\psi(4230)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\mu^+ \mu^-$	$(3.0 \pm 2.7) \times 10^{-5}$	2107	NODE=M074215;DESIG=63
$\eta_c(1S) \pi^+ \pi^-$	not seen	1027	DESIG=65
$\eta_c(1S) \pi^+ \pi^- \pi^0$	seen	992	DESIG=64
$J/\psi \pi^+ \pi^-$	seen	942	DESIG=2
$J/\psi f_0(980), f_0(980) \rightarrow \pi^+ \pi^-$	seen	—	DESIG=41;OUR EVAL;→ UNCHECKED ←
$T_{c\bar{c}1}(3900)^\pm \pi^\mp, T_{c\bar{c}1}^\pm \rightarrow$	seen	—	DESIG=43;OUR EVAL;→ UNCHECKED ←
$J/\psi \pi^\pm$			
$J/\psi \pi^0 \pi^0$	seen	944	DESIG=4
$J/\psi K^+ K^-$	seen	460	DESIG=5;OUR EVAL;→ UNCHECKED ←
$J/\psi K_S^0 K_S^0$	not seen	447	DESIG=44
$J/\psi \eta$	seen	848	DESIG=6
$J/\psi \pi^0$	not seen	966	DESIG=7;OUR EVAL;→ UNCHECKED ←
$J/\psi \eta'$	seen	504	DESIG=8;OUR EVAL;→ UNCHECKED ←
$J/\psi \pi^+ \pi^- \pi^0$	not seen	904	DESIG=9;OUR EVAL;→ UNCHECKED ←
$J/\psi \eta \pi^0$	not seen	770	DESIG=45
$J/\psi \eta \eta$	not seen	211	DESIG=10;OUR EVAL;→ UNCHECKED ←
$\psi(2S) \pi^+ \pi^-$	seen	426	DESIG=11
$\psi(2S) \eta$	not seen	†	DESIG=12;OUR EVAL;→ UNCHECKED ←
$\chi_{c0} \omega$	seen	171	DESIG=13
$\chi_{c1} \pi^+ \pi^- \pi^0$	not seen	527	DESIG=16;OUR EVAL;→ UNCHECKED ←
$\chi_{c2} \pi^+ \pi^- \pi^0$	not seen	477	DESIG=17;OUR EVAL;→ UNCHECKED ←
$h_c(1P) \pi^+ \pi^-$	seen	583	DESIG=40
$\phi \pi^+ \pi^-$	not seen	1976	DESIG=18;OUR EVAL;→ UNCHECKED ←
$\phi f_0(980) \rightarrow \phi \pi^+ \pi^-$	not seen	—	DESIG=22;OUR EVAL;→ UNCHECKED ←
$\phi K^+ K^-$	not seen	1856	DESIG=72;OUR EVAL;→ UNCHECKED ←
$\phi K_S^0 K_S^0$	not seen	1854	DESIG=73;OUR EVAL;→ UNCHECKED ←
$\phi \eta$	not seen	1947	DESIG=76
$\phi \eta'$	not seen	1864	DESIG=70;OUR EVAL;→ UNCHECKED ←
$D \bar{D}$	not seen	987	DESIG=19;OUR EVAL;→ UNCHECKED ←
$D^0 \bar{D}^0$	possibly seen	987	DESIG=31
$D^+ D^-$	possibly seen	978	DESIG=32
$D^* \bar{D} + \text{c.c.}$	not seen	835	DESIG=23;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0 \bar{D}^0 + \text{c.c.}$	not seen	839	DESIG=33
$D^*(2010)^+ D^- + \text{c.c.}$	not seen	829	DESIG=34
$D^* \bar{D}^*$	not seen	641	DESIG=24;OUR EST;→ UNCHECKED ←
$D^*(2007)^0 \bar{D}^*(2007)^0$	not seen	652	DESIG=35

$D^*(2010)^+ D^*(2010)^-$	not seen	641	DESIG=36
$D \bar{D} \pi + \text{c.c.}$	not seen	847	DESIG=37; OUR EST; → UNCHECKED ←
$D^0 D^- \pi^+ + \text{c.c. (excl. } D^*(2007)^0 \bar{D}^{*0} + \text{c.c., } D^*(2010)^+ D^- + \text{c.c.})$	not seen	—	DESIG=38
$D \bar{D}^* \pi + \text{c.c. (excl. } D^* \bar{D}^*)$	not seen	723	DESIG=25
$D^0 D^*(2010)^- \pi^+ + \text{c.c.}$	seen	650	DESIG=30
$D_1(2420) \bar{D} + \text{c.c.}$	not seen	†	DESIG=50
$D^* \bar{D}^* \pi$	seen	367	DESIG=26
$D^{*0} D^{*-} \pi^+$	seen	364	DESIG=74; OUR EVAL; → UNCHECKED ←
$D_s^+ D_s^-$	not seen	760	DESIG=27
$D_s^{*+} D_s^- + \text{c.c.}$	not seen	538	DESIG=28
$D_s^{*+} D_s^{*-}$	not seen	†	DESIG=29
$p \bar{p}$	not seen	1890	DESIG=3; OUR EVAL; → UNCHECKED ←
$p \bar{p} \pi^0$	not seen	1854	DESIG=46; OUR EVAL; → UNCHECKED ←
$p \bar{p} \eta$	not seen	1712	DESIG=61
$\omega \pi^+ \pi^-$	seen	2028	DESIG=71; OUR EVAL; → UNCHECKED ←
$p \bar{p} \omega$	not seen	1610	DESIG=62
$\Xi^- \Xi^+$	not seen	1645	DESIG=51; OUR EVAL; → UNCHECKED ←
$\pi^+ \pi^+ \pi^- \pi^-$	not seen	2087	DESIG=53; OUR EVAL; → UNCHECKED ←
$\pi^+ \pi^+ \pi^- \pi^- \pi^0$	not seen	2071	DESIG=54; OUR EVAL; → UNCHECKED ←
$\omega \pi^0$	not seen	2035	DESIG=68
$\omega \eta$	not seen	1999	DESIG=69
$K_S^0 K^\pm \pi^\mp$	not seen	2032	DESIG=20; OUR EVAL; → UNCHECKED ←
$K_S^0 K^\pm \pi^\mp \pi^0$	not seen	2009	DESIG=48; OUR EVAL; → UNCHECKED ←
$K_S^0 K^\pm \pi^\mp \eta$	not seen	1917	DESIG=49; OUR EVAL; → UNCHECKED ←
$K^+ K^- \pi^0$	not seen	2033	DESIG=21; OUR EVAL; → UNCHECKED ←
$K^+ K^- \pi^+ \pi^-$	not seen	2008	DESIG=55; OUR EVAL; → UNCHECKED ←
$K^+ K^- \pi^+ \pi^- \pi^0$	not seen	1981	DESIG=56; OUR EVAL; → UNCHECKED ←
$K^+ K^+ K^- K^-$	not seen	1813	DESIG=57; OUR EVAL; → UNCHECKED ←
$K^+ K^+ K^- K^- \pi^0$	not seen	1762	DESIG=58; OUR EVAL; → UNCHECKED ←
$p \bar{p} \pi^+ \pi^-$	not seen	1810	DESIG=59; OUR EVAL; → UNCHECKED ←
$p \bar{p} \pi^+ \pi^- \pi^0$	not seen	1764	DESIG=60; OUR EVAL; → UNCHECKED ←
$p \bar{p} p \bar{p}$	not seen	864	DESIG=67
$\Lambda \bar{\Lambda}$	not seen	1791	DESIG=52; OUR EVAL; → UNCHECKED ←
$\Sigma^+ \bar{\Sigma}^-$	not seen	1743	DESIG=77; OUR EVAL; → UNCHECKED ←
$p K^- \bar{\Lambda} + \text{c.c.}$	not seen	1677	DESIG=75; OUR EVAL; → UNCHECKED ←
$\Lambda \Xi^+ K^- + \text{c.c.}$	not seen	1514	DESIG=78; OUR EVAL; → UNCHECKED ←
$\Sigma^0 \Xi^+ K^- + \text{c.c.}$	not seen	1474	DESIG=79; OUR EVAL; → UNCHECKED ←

Radiative decays

$\eta_c(1S) \gamma$	possibly seen	1055	NODE=M074; CLUMP=C DESIG=47
$\eta_c(1S) \pi^0 \gamma$	not seen	1048	DESIG=66
$\chi_{c1} \gamma$	not seen	650	DESIG=14; OUR EVAL; → UNCHECKED ←
$\chi_{c2} \gamma$	not seen	612	DESIG=15; OUR EVAL; → UNCHECKED ←
$\chi_{c1}(3872) \gamma$	seen	334	DESIG=42

 $\chi_{c1}(4274)$

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

NODE=M233

was $X(4274)$

Mass $m = 4286^{+8}_{-9}$ MeV (S = 1.7)
Full width $\Gamma = 51 \pm 7$ MeV

NODE=M233M; DTYPE=M
NODE=M233W; DTYPE=G

$\chi_{c1}(4274)$ DECAY MODESFraction (Γ_i/Γ) p (MeV/c)

$\chi_{c1}(4274)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$J/\psi \phi$	seen	522

NODE=M233215;DESIG=1

 $\psi(4360)$

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

NODE=M181

also known as $Y(4360)$; was $X(4360)$ Mass $m = 4374 \pm 7$ MeV ($S = 2.4$)

NODE=M181M;DTYPE=M

Full width $\Gamma = 120 \pm 12$ MeV ($S = 2.1$)

NODE=M181W;DTYPE=G

 $\psi(4360)$ DECAY MODESFraction (Γ_i/Γ) p (MeV/c)

$\psi(4360)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$e^+ e^-$	seen	2187
$h_c \pi^+ \pi^-$	seen	723
$J/\psi \pi^+ \pi^-$	seen	1063
$\psi(2S) \pi^+ \pi^-$	seen	579
$\psi(3770) \pi^+ \pi^-$	possibly seen	495
$\psi_2(3823) \pi^+ \pi^-$	seen	444
$J/\psi \eta$	seen	982
$D^0 D^{*-} \pi^+$	not seen	868
$D^+ D^- \pi^+ \pi^-$	seen	862
$D_1(2420) \bar{D} + \text{c.c.}$	possibly seen	431
$\phi \eta$	not seen	2030
$\omega \pi^0$	not seen	2115
$\omega \eta$	not seen	2080
$p \bar{p} \eta$	not seen	1806
$p \bar{p} \omega$	not seen	1708
$\chi_{c1} \gamma$	not seen	778
$\chi_{c2} \gamma$	not seen	741
$\Sigma^+ \bar{\Sigma}^-$	not seen	1835
$\Xi^- \bar{\Xi}^+$	not seen	1742
$p K^- \bar{\Lambda} + \text{c.c.}$	not seen	1773
$\Lambda \Xi^+ K^- + \text{c.c.}$	not seen	1620
$\Sigma^0 \Xi^+ K^- + \text{c.c.}$	not seen	1582

NODE=M181215;DESIG=1;OUR EVAL;

→ UNCHECKED ←

DESIG=12

DESIG=8;OUR EVAL;→ UNCHECKED ←

DESIG=2

DESIG=11

DESIG=5

DESIG=4

DESIG=3;OUR EVAL;→ UNCHECKED ←

DESIG=17

DESIG=10

DESIG=20

DESIG=15

DESIG=16

DESIG=13

DESIG=14

DESIG=6;OUR EVAL;→ UNCHECKED ←

DESIG=7;OUR EVAL;→ UNCHECKED ←

DESIG=21;OUR EVAL;→ UNCHECKED ←

DESIG=18;OUR EVAL;→ UNCHECKED ←

DESIG=19;OUR EVAL;→ UNCHECKED ←

DESIG=22;OUR EVAL;→ UNCHECKED ←

DESIG=23;OUR EVAL;→ UNCHECKED ←

 $\psi(4415)^{[J]}$

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

NODE=M073

Mass $m = 4415 \pm 5$ MeV

NODE=M073M;DTYPE=M

Full width $\Gamma = 110 \pm 13$ MeV ($S = 1.6$)

NODE=M073W;DTYPE=G

Due to the complexity of the $c\bar{c}$ 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)	
$D\bar{D}$	seen		1181	DESIG=7;OUR EVAL;→ UNCHECKED ←
$D^0\bar{D}^0$	seen		1181	DESIG=8
D^+D^-	seen		1173	DESIG=9
$D^*\bar{D} + \text{c.c.}$	seen		1057	DESIG=10;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\bar{D}^0 + \text{c.c.}$	seen		1060	DESIG=11
$D^*(2010)^+D^- + \text{c.c.}$	seen		1052	DESIG=12
$D^*\bar{D}^*$	seen		911	DESIG=13;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\bar{D}^*(2007)^0 + \text{c.c.}$	seen		919	DESIG=14
$D^*(2010)^+D^*(2010)^- + \text{c.c.}$	seen		911	DESIG=15
$D^0D^-\pi^+$ (excl. $D^*(2010)^+D^-$ + c.c.)	< 2.3 %	90%	—	DESIG=4
$D\bar{D}_2^*(2460) \rightarrow D^0D^-\pi^+ + \text{c.c.}$	(10 ± 4) %		—	DESIG=5
$D^0\bar{D}^{*-}\pi^+ + \text{c.c.}$	< 31 %	90%	918	DESIG=6
$D_1(2420)\bar{D} + \text{c.c.}$	possibly seen		523	DESIG=25
$D_s^+D_s^-$	not seen		999	DESIG=16
$\omega\chi_{c2}$	(9 ± 4) $\times 10^{-3}$		317	DESIG=20
$D_s^{*+}D_s^- + \text{c.c.}$	seen		842	DESIG=17
$D_s^{*+}D_s^{*-}$	seen		641	DESIG=18
$\psi_2(3823)\pi^+\pi^-$	possibly seen		486	DESIG=21
$\psi(3770)\pi^+\pi^-$	possibly seen		535	DESIG=24
$J/\psi\eta$	< 1.0 %	90%	1017	DESIG=19
$\chi_{c1}\gamma$	< 1.3 $\times 10^{-3}$	90%	811	DESIG=22
$\chi_{c2}\gamma$	< 7 $\times 10^{-3}$	90%	775	DESIG=23
$\Lambda\bar{\Lambda}$	< 5 $\times 10^{-6}$	90%	1905	DESIG=27
$\Sigma^+\bar{\Sigma}^-$	< 1.8 $\times 10^{-4}$	90%	1859	DESIG=32
$\Xi^0\bar{\Xi}^0$	< 1.4 $\times 10^{-4}$	90%	1773	DESIG=35
$\Xi^-\bar{\Xi}^+$	< 6 $\times 10^{-5}$	90%	1768	DESIG=30
$pK^-\bar{\Lambda} + \text{c.c.}$	< 1.0 $\times 10^{-5}$	90%	1798	DESIG=31
$\Lambda\bar{\Xi}^+K^- + \text{c.c.}$	< 4 $\times 10^{-5}$	90%	1647	DESIG=33
$\Sigma^0\bar{\Xi}^+K^- + \text{c.c.}$	< 2.5 $\times 10^{-4}$	90%	1610	DESIG=34
$\omega\pi^0$	not seen		2136	DESIG=28
$\omega\eta$	not seen		2102	DESIG=29
e^+e^-	(3.2 ± 1.2) $\times 10^{-6}$		2207	DESIG=1
$\mu^+\mu^-$	(1.1 ± 0.4) $\times 10^{-5}$		2205	DESIG=26

 $\psi(4660)$

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

NODE=M189

also known as $Y(4660)$; was $X(4660)$

Mass $m = 4623 \pm 10$ MeV ($S = 3.7$)
 Full width $\Gamma = 55 \pm 9$ MeV ($S = 1.9$)

NODE=M189M;DTYPE=M
 NODE=M189W;DTYPE=G

$\psi(4660)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$e^+ e^-$	not seen	2311	NODE=M189215;DESIG=1;OUR EVAL;
$\psi(2S)\pi^+\pi^-$	seen	803	→ UNCHECKED ←
$J/\psi\eta$	not seen	1186	DESIG=2;OUR EVAL;→ UNCHECKED ←
$D^0 D^{*-}\pi^+$	not seen	1146	DESIG=4;OUR EVAL;→ UNCHECKED ←
$D^{*0} D^{*-}\pi^+$	seen	1011	DESIG=3;OUR EVAL;→ UNCHECKED ←
$\psi_2(3823)\pi^+\pi^-$	seen	684	DESIG=15;OUR EVAL;→ UNCHECKED ←
$\chi_{c1}\gamma$	not seen	978	DESIG=10
$\chi_{c1}\phi$	not seen	387	DESIG=6;OUR EVAL;→ UNCHECKED ←
$\chi_{c2}\gamma$	not seen	943	DESIG=13;OUR EVAL;→ UNCHECKED ←
$\chi_{c2}\phi$	not seen	275	DESIG=7;OUR EVAL;→ UNCHECKED ←
$\Lambda_c^+ \Lambda_c^-$	seen	338	DESIG=14;OUR EVAL;→ UNCHECKED ←
$D_s^+ D_{s1}(2536)^-$	seen	517	DESIG=5;OUR EVAL;→ UNCHECKED ←
$D_s^+ D_{s2}^*(2573)^-$	seen	—	DESIG=8;OUR EVAL;→ UNCHECKED ←
$\omega\pi^0$	not seen	2243	DESIG=9;OUR EVAL;→ UNCHECKED ←
$\omega\eta$	not seen	2211	DESIG=11
$\Sigma^+ \bar{\Sigma}^-$	not seen	1982	DESIG=12
$\Xi^- \bar{\Xi}^+$	not seen	1896	DESIG=18;OUR EVAL;→ UNCHECKED ←
$pK^- \bar{\Lambda} + \text{c.c.}$	not seen	1924	DESIG=16;OUR EVAL;→ UNCHECKED ←
$\Lambda \bar{\Xi}^+ K^- + \text{c.c.}$	not seen	1784	DESIG=17;OUR EVAL;→ UNCHECKED ←
$\Sigma^0 \bar{\Xi}^+ K^- + \text{c.c.}$	not seen	1749	DESIG=19;OUR EVAL;→ UNCHECKED ←
			DESIG=20;OUR EVAL;→ UNCHECKED ←

NOTES

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

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

[c] $\Theta(1540)$ is a hypothetical pentaquark state of $1.54 \text{ GeV}/c^2$ mass and a width of less than $25 \text{ MeV}/c^2$.

[d] Includes $p\bar{p}\pi^+\pi^-\gamma$ and excludes $p\bar{p}\eta$, $p\bar{p}\omega$, $p\bar{p}\eta'$.

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

[f] For a narrow scalar or pseudoscalar A^0 with mass $0.21\text{--}3.0 \text{ GeV}$.

[g] For a dark photon U with mass between 100 and 2100 MeV .

[h] For a narrow resonance in the range $2.2 < M(X) < 2.8 \text{ GeV}$.

[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=EGM

LINKAGE=SG

LINKAGE=THT

LINKAGE=MF

LINKAGE=NSA

LINKAGE=NA0

LINKAGE=DPH

LINKAGE=NMR

LINKAGE=MPD