LIGHT UNFLAVORED MESONS ($S = C = B = 0$)

For $I = 1$ (π, b, ρ, a): $u\overline{d}$, $(u\overline{u}-d\overline{d})/\sqrt{2}$, $d\overline{u}$;
for $I = 0$ (η, η', h, h', ω, ϕ, f, f'): $c_1(u\overline{u} + d\overline{d}) + c_2(s\overline{s})$

NODE=MXXX005

$f_0(500)$

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

NODE=M014

also known as σ; was $f_0(600)$

See the review on "Scalar Mesons below 2 GeV."

Mass (T-Matrix Pole $\sqrt{s}$) = (400–550)$-i$(200–350) MeV
NODE=M014PP;DTYPE=M;OUR EST; → UNCHECKED ←
Mass (Breit-Wigner) = (400–550) MeV
NODE=M014M;DTYPE=M;OUR EST; → UNCHECKED ←
Full width (Breit-Wigner) = (400–700) MeV
NODE=M014W;DTYPE=G;OUR EST; → UNCHECKED ←

$f_0(500)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi\pi$	seen	–	NODE=M014215;DESIG=1;OUR EST; → UNCHECKED ←
$\gamma\gamma$	seen	–	DESIG=5;OUR EST;→ UNCHECKED ←

$\rho(770)$

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

NODE=M009

See the note in $\rho(770)$ Particle Listings.

Mass m = 775.26 ± 0.23 MeV
NODE=M009M0;DTYPE=M
Full width Γ = 149.1 ± 0.8 MeV
NODE=M009W5;DTYPE=G

$\rho(770)$ DECAY MODES		Fraction (Γ_i/Γ)		Scale factor/ Confidence level	p (MeV/c)	
$\pi\pi$		∼ 100	%		363	NODE=M009225;DESIG=1;OUR EVAL; → UNCHECKED ←
$\rho(770)^\pm$ decays						NODE=M009;CLUMP=A
$\pi^\pm\gamma$		(4.5 ±0.5)	$\times 10^{-4}$	S=2.2	375	DESIG=3
$\pi^\pm\eta$		< 6	$\times 10^{-3}$	CL=84%	152	DESIG=5
$\pi^\pm\pi^+\pi^-\pi^0$		< 2.0	$\times 10^{-3}$	CL=84%	254	DESIG=21
$\rho(770)^0$ decays						NODE=M009;CLUMP=B
$\pi^+\pi^-\gamma$		(9.9 ±1.6)	$\times 10^{-3}$		362	DESIG=60
$\pi^0\gamma$		(4.7 ±0.8)	$\times 10^{-4}$	S=1.7	376	DESIG=40
$\eta\gamma$		(3.00±0.21)	$\times 10^{-4}$		194	DESIG=8
$\pi^0\pi^0\gamma$		(4.5 ±0.8)	$\times 10^{-5}$		363	DESIG=80
$\mu^+\mu^-$	[a]	(4.55±0.28)	$\times 10^{-5}$		373	DESIG=6
e^+e^-	[a]	(4.72±0.05)	$\times 10^{-5}$		388	DESIG=4
$\pi^+\pi^-\pi^0$		($1.01^{+0.54}_{-0.36}\pm0.34$)	$\times 10^{-4}$		323	DESIG=7;OUR EVAL;→ UNCHECKED ←
$\pi^+\pi^-\pi^+\pi^-$		(1.8 ±0.9)	$\times 10^{-5}$		251	DESIG=22
$\pi^+\pi^-\pi^0\pi^0$		(1.6 ±0.8)	$\times 10^{-5}$		257	DESIG=30
$\pi^0e^+e^-$		< 1.2	$\times 10^{-5}$	CL=90%	376	DESIG=9

$\omega(782)$

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

NODE=M001

Mass m = 782.66 ± 0.13 MeV (S = 2.0)
NODE=M001M;DTYPE=M
Full width Γ = 8.68 ± 0.13 MeV
NODE=M001W;DTYPE=G

$\omega(782)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$\pi^+\pi^-\pi^0$	(89.2 ±0.7) %		327	NODE=M001215;DESIG=1
$\pi^0\gamma$	(8.34±0.26) %	S=2.1	380	DESIG=3
$\pi^+\pi^-$	($1.53^{+0.11}_{-0.13}$) %	S=1.2	366	DESIG=2
neutrals (excluding $\pi^0\gamma$)	(7^{+7}_{-5}) $\times 10^{-3}$	S=1.1	–	DESIG=13
$\eta\gamma$	(4.5 ±0.4) $\times 10^{-4}$	S=1.1	200	DESIG=6
$\pi^0 e^+ e^-$	(7.7 ±0.6) $\times 10^{-4}$		380	DESIG=14
$\pi^0\mu^+\mu^-$	(1.34±0.18) $\times 10^{-4}$	S=1.5	349	DESIG=11
e^+e^-	(7.39±0.19) $\times 10^{-5}$	S=1.7	391	DESIG=7
$\pi^+\pi^-\pi^0\pi^0$	< 2 $\times 10^{-4}$	CL=90%	262	DESIG=12
$\pi^+\pi^-\gamma$	< 3.6 $\times 10^{-3}$	CL=95%	366	DESIG=4
$\pi^+\pi^-\pi^+\pi^-$	< 1 $\times 10^{-3}$	CL=90%	256	DESIG=15
$\pi^0\pi^0\gamma$	(6.7 ±1.1) $\times 10^{-5}$		367	DESIG=5
$\eta\pi^0\gamma$	< 3.3 $\times 10^{-5}$	CL=90%	162	DESIG=17
$\mu^+\mu^-$	(7.4 ±1.8) $\times 10^{-5}$		377	DESIG=8
3γ	< 1.9 $\times 10^{-4}$	CL=95%	391	DESIG=10
Charge conjugation (C) violating modes				NODE=M001;CLUMP=A
$\eta\pi^0$ C	< 2.1 $\times 10^{-4}$	CL=90%	162	DESIG=9
$2\pi^0$ C	< 2.2 $\times 10^{-4}$	CL=90%	367	DESIG=193
$3\pi^0$ C	< 2.3 $\times 10^{-4}$	CL=90%	330	DESIG=16
invisible	< 7 $\times 10^{-5}$	CL=90%	–	DESIG=194

$\eta'(958)$

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

NODE=M002

Mass $m = 957.78 \pm 0.06$ MeV NODE=M002M;DTYPE=M

Full width $\Gamma = 0.188 \pm 0.006$ MeV NODE=M002W;DTYPE=G

$\eta'(958)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$\pi^+\pi^-\eta$	(42.5 ±0.5) %		232	NODE=M002215;DESIG=1
$\rho^0\gamma$(including non-resonant $\pi^+\pi^-\gamma$)	(29.5 ±0.4) %		165	DESIG=9
$\pi^0\pi^0\eta$	(22.4 ±0.5) %		239	DESIG=2
$\omega\gamma$	(2.52 ±0.07) %		159	DESIG=7
$\omega e^+ e^-$	(2.0 ±0.4) $\times 10^{-4}$		159	DESIG=205
$\gamma\gamma$	(2.307±0.033) %		479	DESIG=6
$3\pi^0$	(2.50 ±0.17) $\times 10^{-3}$		430	DESIG=8
$\mu^+\mu^-\gamma$	(1.13 ±0.28) $\times 10^{-4}$		467	DESIG=20
$\pi^+\pi^-\mu^+\mu^-$	< 2.9 $\times 10^{-5}$	90%	401	DESIG=201
$\pi^+\pi^-\pi^0$	(3.61 ±0.17) $\times 10^{-3}$		428	DESIG=121
$(\pi^+\pi^-\pi^0)$ S-wave	(3.8 ±0.5) $\times 10^{-3}$		428	DESIG=211
$\pi^\mp\rho^\pm$	(7.4 ±2.3) $\times 10^{-4}$		106	DESIG=210
$\pi^0\rho^0$	< 4 %	90%	111	DESIG=18
$2(\pi^+\pi^-)$	(8.4 ±0.9) $\times 10^{-5}$		372	DESIG=131
$\pi^+\pi^-2\pi^0$	(1.8 ±0.4) $\times 10^{-4}$		376	DESIG=202
$2(\pi^+\pi^-)$ neutrals	< 1 %	95%	–	DESIG=132
$2(\pi^+\pi^-)\pi^0$	< 1.8 $\times 10^{-3}$	90%	298	DESIG=141
$2(\pi^+\pi^-)2\pi^0$	< 1 %	95%	197	DESIG=15
$3(\pi^+\pi^-)$	< 3.1 $\times 10^{-5}$	90%	189	DESIG=203
$K^\pm\pi^\mp$	< 4 $\times 10^{-5}$	90%	334	DESIG=207
$\pi^+\pi^- e^+ e^-$	($2.4^{+1.3}_{-1.0}$) $\times 10^{-3}$		458	DESIG=10
$\pi^+ e^-\nu_e$ + c.c.	< 2.1 $\times 10^{-4}$	90%	469	DESIG=204
$\gamma e^+ e^-$	(4.91 ±0.27) $\times 10^{-4}$		479	DESIG=28
$\pi^0\gamma\gamma$	(3.20 ±0.24) $\times 10^{-3}$		469	DESIG=24
$\pi^0\gamma\gamma$(non resonant)	(6.2 ±0.9) $\times 10^{-4}$		–	DESIG=212
$\eta\gamma\gamma$	< 1.33 $\times 10^{-4}$	90%	322	DESIG=214
$4\pi^0$	< 4.94 $\times 10^{-5}$	90%	380	DESIG=26
e^+e^-	< 5.6 $\times 10^{-9}$	90%	479	DESIG=150
invisible	< 6 $\times 10^{-4}$	90%	–	DESIG=200

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

NODE=M002;CLUMP=B

$\pi^+\pi^-$	P,CP	$<$ 1.8	$\times 10^{-5}$	90%	458	DESIG=111
$\pi^0\pi^0$	P,CP	$<$ 4	$\times 10^{-4}$	90%	459	DESIG=25
$\pi^0 e^+ e^-$	C	[b] $<$ 1.4	$\times 10^{-3}$	90%	469	DESIG=16
$\eta e^+ e^-$	C	[b] $<$ 2.4	$\times 10^{-3}$	90%	322	DESIG=17
3γ	C	$<$ 1.0	$\times 10^{-4}$	90%	479	DESIG=23
$\mu^+\mu^-\pi^0$	C	[b] $<$ 6.0	$\times 10^{-5}$	90%	445	DESIG=22
$\mu^+\mu^-\eta$	C	[b] $<$ 1.5	$\times 10^{-5}$	90%	273	DESIG=21
$e\mu$	LF	$<$ 4.7	$\times 10^{-4}$	90%	473	DESIG=27

$f_0(980)$

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

NODE=M003

See the review on "Scalar Mesons below 2 GeV."

Mass $m = 990 \pm 20$ MeV

NODE=M003M1;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 10$ to 100 MeV

NODE=M003W1;DTYPE=G;OUR EST; → UNCHECKED ←

$f_0(980)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi\pi$	seen	476	NODE=M003215;DESIG=2;OUR EVAL; → UNCHECKED ←
$K\overline{K}$	seen	36	DESIG=1;OUR EVAL;→ UNCHECKED ←
$\gamma\gamma$	seen	495	DESIG=5;OUR EVAL;→ UNCHECKED ←

$a_0(980)$

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

NODE=M036

See the review on "Scalar Mesons below 2 GeV."

Mass $m = 980 \pm 20$ MeV

NODE=M036MX;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 50$ to 100 MeV

NODE=M036W1;DTYPE=G;OUR EST; → UNCHECKED ←

$a_0(980)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\eta\pi$	seen	319	NODE=M036215;DESIG=1;OUR EST; → UNCHECKED ←
$K\overline{K}$	seen	†	DESIG=3;OUR EST;→ UNCHECKED ←
$\eta'\pi$	seen	†	DESIG=8
$\rho\pi$	not seen	137	DESIG=2;OUR EST;→ UNCHECKED ←
$\gamma\gamma$	seen	490	DESIG=5;OUR EST;→ UNCHECKED ←

$\phi(1020)$

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

NODE=M004

Mass $m = 1019.461 \pm 0.016$ MeV

NODE=M004M;DTYPE=M

Full width $\Gamma = 4.249 \pm 0.013$ MeV (S = 1.1)

NODE=M004W;DTYPE=G

$\phi(1020)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
K^+K^-	(49.2 ±0.5) %	S=1.3	127	NODE=M004215;DESIG=1
$K^0_L K^0_S$	(34.0 ±0.4) %	S=1.3	110	DESIG=2
$\rho\pi + \pi^+\pi^-\pi^0$	(15.24 ±0.33) %	S=1.2	–	DESIG=24
$\eta\gamma$	(1.303±0.025) %	S=1.2	363	DESIG=4
$\pi^0\gamma$	(1.32 ±0.06) $\times 10^{-3}$		501	DESIG=7
$\ell^+\ell^-$	—		510	DESIG=256;OUR EVAL;→ UNCHECKED ←
e^+e^-	(2.974±0.034) $\times 10^{-4}$	S=1.3	510	DESIG=5
$\mu^+\mu^-$	(2.86 ±0.19) $\times 10^{-4}$		499	DESIG=6
ηe^+e^-	(1.08 ±0.04) $\times 10^{-4}$		363	DESIG=17
$\pi^+\pi^-$	(7.3 ±1.3) $\times 10^{-5}$		490	DESIG=8
$\omega\pi^0$	(4.7 ±0.5) $\times 10^{-5}$		171	DESIG=25
$\omega\gamma$	< 5 %	CL=84%	209	DESIG=10
$\rho\gamma$	< 1.2 $\times 10^{-5}$	CL=90%	215	DESIG=12
$\pi^+\pi^-\gamma$	(4.1 ±1.3) $\times 10^{-5}$		490	DESIG=9
$f_0(980)\gamma$	(3.22 ±0.19) $\times 10^{-4}$	S=1.1	29	DESIG=20
$\pi^0\pi^0\gamma$	(1.12 ±0.06) $\times 10^{-4}$		492	DESIG=19
$\pi^+\pi^-\pi^+\pi^-$	(3.9 $^{+2.8}_{-2.2}$) $\times 10^{-6}$		410	DESIG=15
$\pi^+\pi^+\pi^-\pi^-\pi^0$	< 4.6 $\times 10^{-6}$	CL=90%	342	DESIG=14
$\pi^0 e^+e^-$	(1.33 $^{+0.07}_{-0.10}$) $\times 10^{-5}$		501	DESIG=21
$\pi^0\eta\gamma$	(7.27 ±0.30) $\times 10^{-5}$	S=1.5	346	DESIG=22
$a_0(980)\gamma$	(7.6 ±0.6) $\times 10^{-5}$		39	DESIG=23
$K^0\overline{K}^0\gamma$	< 1.9 $\times 10^{-8}$	CL=90%	110	DESIG=257
$\eta'(958)\gamma$	(6.22 ±0.21) $\times 10^{-5}$		60	DESIG=194
$\eta\pi^0\pi^0\gamma$	< 2 $\times 10^{-5}$	CL=90%	293	DESIG=195
$\mu^+\mu^-\gamma$	(1.4 ±0.5) $\times 10^{-5}$		499	DESIG=196
$\rho\gamma\gamma$	< 1.2 $\times 10^{-4}$	CL=90%	215	DESIG=250
$\eta\pi^+\pi^-$	< 1.8 $\times 10^{-5}$	CL=90%	288	DESIG=255
$\eta\mu^+\mu^-$	< 9.4 $\times 10^{-6}$	CL=90%	321	DESIG=26
$\eta U \to \eta e^+e^-$	< 1 $\times 10^{-6}$	CL=90%	–	DESIG=259
invisible	< 1.7 $\times 10^{-4}$	CL=90%	–	DESIG=260
Lepton Family number (LF) violating modes				NODE=M004;CLUMP=A
$e^\pm\mu^\mp$ *LF*	< 2 $\times 10^{-6}$	CL=90%	504	DESIG=258

$h_1(1170)$

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

NODE=M030

Mass $m = 1166 \pm 6$ MeV

NODE=M030M;DTYPE=M

Full width $\Gamma = 375 \pm 35$ MeV

NODE=M030W;DTYPE=G

$h_1(1170)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\rho\pi$	seen	305	NODE=M030215;DESIG=1;OUR EST; → UNCHECKED ←

$b_1(1235)$

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

NODE=M011

Mass $m = 1229.5 \pm 3.2$ MeV (S = 1.6)

NODE=M011M;DTYPE=M

Full width $\Gamma = 142 \pm 9$ MeV (S = 1.2)

NODE=M011W;DTYPE=G

$b_1(1235)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$\omega\pi$	seen		348	NODE=M011215;DESIG=1;OUR EST; → UNCHECKED ←
[D/S amplitude ratio = 0.277 ± 0.027]				
$\pi^\pm\gamma$	$(1.6\pm0.4)\times10^{-3}$		607	DESIG=9
$\eta\rho$	seen		†	DESIG=8;OUR EST;→ UNCHECKED ←
$\pi^+\pi^+\pi^-\pi^0$	< 50 %	84%	535	DESIG=2;OUR EST;→ UNCHECKED ←
$K^*(892)^\pm K^\mp$	seen		†	DESIG=74
$(K\overline{K})^\pm\pi^0$	< 8 %	90%	248	DESIG=71;OUR EST;→ UNCHECKED ←
$K^0_S K^0_L \pi^\pm$	< 6 %	90%	235	DESIG=73;OUR EST;→ UNCHECKED ←
$K^0_S K^0_S \pi^\pm$	< 2 %	90%	235	DESIG=72;OUR EST;→ UNCHECKED ←
$\phi\pi$	< 1.5 %	84%	147	DESIG=5;OUR EST;→ UNCHECKED ←

$a_1(1260)$ [c]

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

NODE=M010

Mass $m = 1230 \pm 40$ MeV [d]
Full width Γ = 250 to 600 MeV

NODE=M010M;DTYPE=M;OUR EST; → UNCHECKED ←
NODE=M010W;DTYPE=G;OUR EST; → UNCHECKED ←

$a_1(1260)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
3π	seen	577	NODE=M010215;DESIG=17;OUR EST; → UNCHECKED ←
$(\rho\pi)_{S-\text{wave}},\ \rho\to\pi\pi$	seen	353	DESIG=7;OUR EST;→ UNCHECKED ←
$(\rho\pi)_{D-\text{wave}},\ \rho\to\pi\pi$	seen	353	DESIG=8;OUR EST;→ UNCHECKED ←
$(\rho(1450)\pi)_{S-\text{wave}},\ \rho\to\pi\pi$	seen	†	DESIG=9;OUR EST;→ UNCHECKED ←
$(\rho(1450)\pi)_{D-\text{wave}},\ \rho\to\pi\pi$	seen	†	DESIG=10;OUR EST;→ UNCHECKED ←
$f_0(500)\pi,\ f_0\to\pi\pi$	seen	–	DESIG=16;OUR EST;→ UNCHECKED ←
$f_0(980)\pi,\ f_0\to\pi\pi$	not seen	179	DESIG=11;OUR EST;→ UNCHECKED ←
$f_0(1370)\pi,\ f_0\to\pi\pi$	seen	†	DESIG=12;OUR EST;→ UNCHECKED ←
$f_2(1270)\pi,\ f_2\to\pi\pi$	seen	†	DESIG=13;OUR EST;→ UNCHECKED ←
$\pi^+\pi^-\pi^0$	seen	576	DESIG=22
$\pi^0\pi^0\pi^0$	not seen	577	DESIG=23;OUR EST;→ UNCHECKED ←
$K\overline{K}\pi$	seen	250	DESIG=18;OUR EST;→ UNCHECKED ←
$K^*(892)K$	seen	†	DESIG=14;OUR EST;→ UNCHECKED ←
$\pi\gamma$	seen	608	DESIG=4;OUR EST;→ UNCHECKED ←

$f_2(1270)$

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

NODE=M005

Mass $m = 1275.5 \pm 0.8$ MeV
Full width $\Gamma = 186.7^{+2.2}_{-2.5}$ MeV (S = 1.4)

NODE=M005M;DTYPE=M
NODE=M005W;DTYPE=G

$f_2(1270)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$\pi\pi$	$(84.2\ ^{+2.9}_{-0.9})$ %	S=1.1	623	NODE=M005215;DESIG=1
$\pi^+\pi^-2\pi^0$	$(7.7\ ^{+1.1}_{-3.2})$ %	S=1.2	563	DESIG=3
$K\overline{K}$	$(4.6\ ^{+0.5}_{-0.4})$ %	S=2.7	404	DESIG=4
$2\pi^+2\pi^-$	$(2.8\ \pm0.4)$ %	S=1.2	560	DESIG=2
$\eta\eta$	$(4.0\ \pm0.8)\times10^{-3}$	S=2.1	326	DESIG=7
$4\pi^0$	$(3.0\ \pm1.0)\times10^{-3}$		565	DESIG=9
$\gamma\gamma$	$(1.42\pm0.24)\times10^{-5}$	S=1.4	638	DESIG=8
$\eta\pi\pi$	$< 8 \times10^{-3}$	CL=95%	478	DESIG=6
$K^0K^-\pi^+$ + c.c.	$< 3.4 \times10^{-3}$	CL=95%	293	DESIG=5
e^+e^-	$< 6 \times10^{-10}$	CL=90%	638	DESIG=10

$f_1(1285)$

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

NODE=M008

Mass $m = 1281.9 \pm 0.5$ MeV (S = 1.8)
Full width $\Gamma = 22.7 \pm 1.1$ MeV (S = 1.5)

NODE=M008M;DTYPE=M
NODE=M008W;DTYPE=G

$f_1(1285)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
4π	(32.7± 1.9) %	S=1.2	568	NODE=M008215;DESIG=21
$\pi^0\pi^0\pi^+\pi^-$	(21.8± 1.3) %	S=1.2	566	DESIG=22
$2\pi^+2\pi^-$	(10.9± 0.6) %	S=1.2	563	DESIG=20
$\rho^0\pi^+\pi^-$	(10.9± 0.6) %	S=1.2	336	DESIG=191
$\rho^0\rho^0$	seen		†	DESIG=23
$4\pi^0$	$< 7 \times 10^{-4}$	CL=90%	568	DESIG=7
$\eta\pi^+\pi^-$	(35 ±15) %		479	DESIG=198
$\eta\pi\pi$	(52.2± 2.0) %	S=1.2	482	DESIG=3
$a_0(980)\pi$ [ignoring $a_0(980) \to K\overline{K}$]	(38 ± 4) %		238	DESIG=4
$\eta\pi\pi$ [excluding $a_0(980)\pi$]	(14 ± 4) %		482	DESIG=5
$K\overline{K}\pi$	(9.0± 0.4) %	S=1.1	308	DESIG=1
$K\overline{K}^*(892)$	not seen		†	DESIG=6
$\pi^+\pi^-\pi^0$	$(3.0\pm 0.9)\times 10^{-3}$		603	DESIG=197
$\rho^\pm\pi^\mp$	$< 3.1 \times 10^{-3}$	CL=95%	390	DESIG=199
$\gamma\rho^0$	(6.1± 1.0) %	S=1.7	406	DESIG=13
$\phi\gamma$	$(7.4\pm 2.6)\times 10^{-4}$		236	DESIG=10
e^+e^-	$< 9.4 \times 10^{-9}$	CL=90%	641	DESIG=200

$\eta(1295)$

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

NODE=M037

See the review on "Pseudoscalar and pseudovector mesons in the 1400 MeV region."

Mass $m = 1294 \pm 4$ MeV (S = 1.6)

NODE=M037M;DTYPE=M

Full width $\Gamma = 55 \pm 5$ MeV

NODE=M037W;DTYPE=G

$\eta(1295)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\eta\pi^+\pi^-$	seen	487	NODE=M037215;DESIG=2;OUR EST; → UNCHECKED ←
$a_0(980)\pi$	seen	248	DESIG=1;OUR EST;→ UNCHECKED ←
$\eta\pi^0\pi^0$	seen	490	DESIG=4;OUR EST;→ UNCHECKED ←
$\eta(\pi\pi)_{S\text{-wave}}$	seen	–	DESIG=5;OUR EST;→ UNCHECKED ←

$\pi(1300)$

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

NODE=M058

Mass $m = 1300 \pm 100$ MeV [d]

NODE=M058M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 200$ to 600 MeV

NODE=M058W;DTYPE=G;OUR EST; → UNCHECKED ←

$\pi(1300)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\rho\pi$	seen	404	NODE=M058215;DESIG=1;OUR EST; → UNCHECKED ←
$\pi(\pi\pi)_{S\text{-wave}}$	seen	–	DESIG=3;OUR EST;→ UNCHECKED ←

$a_2(1320)$

$I^G(J^{PC}) = 1^-(2^{++})$

NODE=M012

Mass $m = 1318.2 \pm 0.6$ MeV (S = 1.2)

NODE=M012M0;DTYPE=M

Full width $\Gamma = 107 \pm 5$ MeV [d]

NODE=M012W0;DTYPE=G;OUR EST; → UNCHECKED ←

$a_2(1320)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
3π	(70.1 ±2.7) %	S=1.2	623	NODE=M012215;DESIG=1
$\eta\pi$	(14.5 ±1.2) %		535	DESIG=3
$\omega\pi\pi$	(10.6 ±3.2) %	S=1.3	364	DESIG=4
$K\overline{K}$	(4.9 ±0.8) %		436	DESIG=2
$\eta'(958)\pi$	(5.5 ±0.9) $\times 10^{-3}$		287	DESIG=8
$\pi^{\pm}\gamma$	(2.91±0.27) $\times 10^{-3}$		651	DESIG=7
$\gamma\gamma$	(9.4 ±0.7) $\times 10^{-6}$		658	DESIG=9
e^+e^-	< 5 $\times 10^{-9}$	CL=90%	658	DESIG=10

$f_0(1370)$

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

NODE=M147

See the review on "Scalar Mesons below 2 GeV."

Mass m = 1200 to 1500 MeV

NODE=M147M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width Γ = 200 to 500 MeV

NODE=M147W;DTYPE=G;OUR EST; → UNCHECKED ←

$f_0(1370)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi\pi$	seen	672	NODE=M147215;DESIG=1;OUR EST; → UNCHECKED ←
4π	seen	617	DESIG=10;OUR EST;→ UNCHECKED ←
$4\pi^0$	seen	617	DESIG=4;OUR EST;→ UNCHECKED ←
$2\pi^+2\pi^-$	seen	612	DESIG=5;OUR EST;→ UNCHECKED ←
$\pi^+\pi^-2\pi^0$	seen	615	DESIG=6;OUR EST;→ UNCHECKED ←
$\rho\rho$	seen	†	DESIG=14;OUR EST;→ UNCHECKED ←
$2(\pi\pi)_{S\text{-wave}}$	seen	–	DESIG=15;OUR EST;→ UNCHECKED ←
$\pi(1300)\pi$	seen	†	DESIG=16;OUR EVAL;→ UNCHECKED ←
$a_1(1260)\pi$	seen	35	DESIG=17;OUR EVAL;→ UNCHECKED ←
$\eta\eta$	seen	411	DESIG=2;OUR EST;→ UNCHECKED ←
$K\overline{K}$	seen	475	DESIG=11;OUR EST;→ UNCHECKED ←
$K\overline{K}n\pi$	not seen	†	DESIG=18;OUR EVAL;→ UNCHECKED ←
6π	not seen	508	DESIG=19;OUR EVAL;→ UNCHECKED ←
$\omega\omega$	not seen	†	DESIG=20;OUR EVAL;→ UNCHECKED ←
$\gamma\gamma$	seen	685	DESIG=12;OUR EST;→ UNCHECKED ←
e^+e^-	not seen	685	DESIG=13;OUR EST;→ UNCHECKED ←

$\pi_1(1400)$

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

NODE=M111

See the review on "Non-$q\overline{q}$ Mesons." See also $\pi_1(1600)$.

Mass m = 1354 ± 25 MeV (S = 1.8)

NODE=M111M;DTYPE=M

Full width Γ = 330 ± 35 MeV

NODE=M111W;DTYPE=G

$\pi_1(1400)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\eta\pi^0$	seen	557	NODE=M111215;DESIG=1;OUR EST; → UNCHECKED ←
$\eta\pi^-$	seen	556	DESIG=4;OUR EST;→ UNCHECKED ←
$\rho(770)\pi$	not seen	442	DESIG=5

$\eta(1405)$

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

NODE=M027

See the review on "Pseudoscalar and Pseudovector Mesons in the 1400 MeV Region." See also $\eta(1475)$.

Mass m = 1408.8 ± 2.0 MeV (S = 2.2)

NODE=M027MX;DTYPE=M

Full width Γ = 50.1 ± 2.6 MeV (S = 1.7)

NODE=M027WX;DTYPE=G

$\eta(1405)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$K\overline{K}\pi$	seen		424	NODE=M027215;DESIG=2;OUR EST; → UNCHECKED ←
$\eta\pi\pi$	seen		562	DESIG=5;OUR EST;→ UNCHECKED ←
$a_0(980)\pi$	seen		345	DESIG=4;OUR EST;→ UNCHECKED ←
$\eta(\pi\pi)_{S\text{-wave}}$	seen		–	DESIG=9;OUR EST;→ UNCHECKED ←
$f_0(980)\pi^0 \rightarrow \pi^+\pi^-\pi^0$	not seen		–	DESIG=15
$f_0(980)\eta$	seen		†	DESIG=10;OUR EST;→ UNCHECKED ←
4π	seen		639	DESIG=6;OUR EST;→ UNCHECKED ←
$\rho\rho$	<58 %	99.85%	†	DESIG=12
$\rho^0\gamma$	seen		491	DESIG=8;OUR EST;→ UNCHECKED ←
$K^*(892)K$	seen		123	DESIG=11;OUR EST;→ UNCHECKED ←

$h_1(1415)$

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

NODE=M109

was $h_1(1380)$

Mass $m = 1416 \pm 8$ MeV (S = 1.5)

NODE=M109M;DTYPE=M

Full width $\Gamma = 90 \pm 15$ MeV

NODE=M109W;DTYPE=G

$f_1(1420)$

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

NODE=M006

See the review on "Pseudoscalar and Pseudovector Mesons in the 1400 MeV Region."

Mass $m = 1426.3 \pm 0.9$ MeV (S = 1.1)

NODE=M006M2;DTYPE=M

Full width $\Gamma = 54.5 \pm 2.6$ MeV

NODE=M006W;DTYPE=G

$f_1(1420)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\overline{K}\pi$	seen	438	NODE=M006215;DESIG=2;OUR EST; → UNCHECKED ←
$K\overline{K}^*(892)+$ c.c.	seen	163	DESIG=1;OUR EST;→ UNCHECKED ←
$\eta\pi\pi$	possibly seen	573	DESIG=5;OUR EST;→ UNCHECKED ←
$\phi\gamma$	seen	349	DESIG=9;OUR EST;→ UNCHECKED ←

$\omega(1420)$ [e]

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

NODE=M125

Mass $m = 1410 \pm 60$ MeV [d]

NODE=M125M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 290 \pm 190$ MeV [d]

NODE=M125W;DTYPE=G;OUR EST; → UNCHECKED ←

$\omega(1420)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\rho\pi$	seen	480	NODE=M125215;DESIG=1;OUR EST; → UNCHECKED ←
$\omega\pi\pi$	seen	437	DESIG=4;OUR EST;→ UNCHECKED ←
$b_1(1235)\pi$	seen	112	DESIG=5;OUR EST;→ UNCHECKED ←
e^+e^-	seen	705	DESIG=3;OUR EST;→ UNCHECKED ←

$a_0(1450)$

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

NODE=M149

See the review on "Scalar Mesons below 2 GeV."

Mass $m = 1474 \pm 19$ MeV

NODE=M149M;DTYPE=M

Full width $\Gamma = 265 \pm 13$ MeV

NODE=M149W;DTYPE=G

$a_0(1450)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi\eta$	0.093±0.020	627	NODE=M149215;DESIG=1
$\pi\eta'(958)$	0.033±0.017	410	DESIG=2
$K\overline{K}$	0.082±0.028	547	DESIG=3
$\omega\pi\pi$	**DEFINED AS 1**	484	DESIG=4
$a_0(980)\pi\pi$	seen	342	DESIG=5
$\gamma\gamma$	seen	737	DESIG=6

$\rho(1450)$

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

NODE=M105

See the note in $\rho(1450)$ Particle Listings.

Mass $m = 1465 \pm 25$ MeV [d]

Full width $\Gamma = 400 \pm 60$ MeV [d]

NODE=M105M0;DTYPE=M;OUR EST;→ UNCHECKED ←
NODE=M105W0;DTYPE=G;OUR EST;→ UNCHECKED ←

$\rho(1450)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi\pi$	seen	720	NODE=M105215;DESIG=1;OUR EST;→ UNCHECKED ←
$\pi^+\pi^-$	seen	719	DESIG=20;OUR EVAL;→ UNCHECKED ←
4π	seen	669	DESIG=2;OUR EST;→ UNCHECKED ←
e^+e^-	seen	732	DESIG=4;OUR EST;→ UNCHECKED ←
$\eta\rho$	seen	311	DESIG=3
$a_2(1320)\pi$	not seen	58	DESIG=8;OUR EST;→ UNCHECKED ←
$K\overline{K}$	seen	541	DESIG=7;OUR EVAL;→ UNCHECKED ←
K^+K^-	seen	541	DESIG=21;OUR EVAL;→ UNCHECKED ←
$K\overline{K}^*(892)+$ c.c.	possibly seen	229	DESIG=15;OUR EST;→ UNCHECKED ←
$\eta\gamma$	seen	630	DESIG=9
$f_0(500)\gamma$	not seen	–	DESIG=16;OUR EST;→ UNCHECKED ←
$f_0(980)\gamma$	not seen	398	DESIG=17;OUR EST;→ UNCHECKED ←
$f_0(1370)\gamma$	not seen	92	DESIG=18;OUR EST;→ UNCHECKED ←
$f_2(1270)\gamma$	not seen	177	DESIG=19;OUR EST;→ UNCHECKED ←

$\eta(1475)$

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

NODE=M175

See the review on "Pseudoscalar and Pseudovector Mesons in the 1400 MeV Region." See also $\eta(1405)$.

Mass $m = 1475 \pm 4$ MeV (S = 1.4)

Full width $\Gamma = 90 \pm 9$ MeV (S = 1.6)

NODE=M175M5;DTYPE=M
NODE=M175W5;DTYPE=G

$\eta(1475)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\overline{K}\pi$	seen	477	NODE=M175215;DESIG=2;OUR EST;→ UNCHECKED ←
$K\overline{K}^*(892)+$ c.c.	seen	244	DESIG=1;OUR EST;→ UNCHECKED ←
$a_0(980)\pi$	seen	396	DESIG=4;OUR EST;→ UNCHECKED ←
$\gamma\gamma$	seen	738	DESIG=7;OUR EST;→ UNCHECKED ←
$K^0_S K^0_S \eta$	possibly seen	†	DESIG=8;OUR EVAL;→ UNCHECKED ←
$\gamma\phi(1020)$	possibly seen	385	DESIG=9

$f_0(1500)$

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

NODE=M152

See the reviews on "Scalar Mesons below 2 GeV" and on "Non-$q\overline{q}$ Mesons".

Mass $m = 1506 \pm 6$ MeV (S = 1.4)

Full width $\Gamma = 112 \pm 9$ MeV

NODE=M152M;DTYPE=M
NODE=M152W;DTYPE=G

$f_0(1500)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor	p (MeV/c)	
$\pi\pi$	(34.5±2.2) %	1.2	741	NODE=M152215;DESIG=8
$\pi^+\pi^-$	seen		740	DESIG=9
$2\pi^0$	seen		741	DESIG=3;OUR EST;→ UNCHECKED ←
4π	(48.9±3.3) %	1.2	692	DESIG=7
$4\pi^0$	seen		692	DESIG=5;OUR EST;→ UNCHECKED ←
$2\pi^+2\pi^-$	seen		687	DESIG=6;OUR EST;→ UNCHECKED ←
$2(\pi\pi)_{S\text{-wave}}$	seen		–	DESIG=11;OUR EST;→ UNCHECKED ←
$\rho\rho$	seen		†	DESIG=12;OUR EST;→ UNCHECKED ←
$\pi(1300)\pi$	seen		145	DESIG=13;OUR EST;→ UNCHECKED ←
$a_1(1260)\pi$	seen		219	DESIG=14;OUR EST;→ UNCHECKED ←
$\eta\eta$	(6.0±0.9) %	1.1	517	DESIG=1
$\eta\eta'(958)$	(2.2±0.8) %	1.4	20	DESIG=2
$K\overline{K}$	(8.5±1.0) %	1.1	569	DESIG=4
$\gamma\gamma$	not seen		753	DESIG=10;OUR EST;→ UNCHECKED ←

$f_2'(1525)$

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

NODE=M013

Mass $m = 1517.4 \pm 2.5$ MeV (S = 2.8)
NODE=M013MX;DTYPE=M

Full width $\Gamma = 86 \pm 5$ MeV (S = 2.2)
NODE=M013WX;DTYPE=G

$f_2'(1525)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor	p (MeV/c)	
$K\overline{K}$	(87.6±2.2) %	1.1	576	NODE=M013215;DESIG=2
$\eta\eta$	(11.6±2.2) %	1.1	525	DESIG=4
$\pi\pi$	(8.3±1.6) × 10^{-3}		747	DESIG=1
$\gamma\gamma$	(9.5±1.1) × 10^{-7}	1.1	759	DESIG=8

$\pi_1(1600)$

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

NODE=M164

See the review on "Non-$q\overline{q}$ Mesons" and a note in PDG 06, Journal of Physics **G33** 1 (2006). See also $\pi_1(1400)$.

Mass $m = 1661^{+15}_{-11}$ MeV (S = 1.2)
NODE=M164M;DTYPE=M

Full width $\Gamma = 240 \pm 50$ MeV (S = 1.7)
NODE=M164W;DTYPE=G

$\pi_1(1600)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi\pi\pi$	seen	802	NODE=M164215;DESIG=1;OUR EST; → UNCHECKED ←
$\rho^0\pi^-$	seen	640	DESIG=2
$f_2(1270)\pi^-$	not seen	316	DESIG=4
$b_1(1235)\pi$	seen	355	DESIG=5
$\eta'(958)\pi^-$	seen	542	DESIG=3
$f_1(1285)\pi$	seen	312	DESIG=6;OUR EST;→ UNCHECKED ←

$a_1(1640)$

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

NODE=M161

Mass $m = 1655 \pm 16$ MeV (S = 1.2)
NODE=M161M;DTYPE=M

Full width $\Gamma = 254 \pm 40$ MeV (S = 1.8)
NODE=M161W;DTYPE=G

$a_1(1640)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi\pi\pi$	seen	800	NODE=M161215;DESIG=3;OUR EST; → UNCHECKED ←
$f_2(1270)\pi$	seen	314	DESIG=1;OUR EST;→ UNCHECKED ←
$\sigma\pi$	seen	–	DESIG=2;OUR EST;→ UNCHECKED ←
$\rho\pi$ $S-wave$	seen	638	DESIG=7;OUR EST;→ UNCHECKED ←
$\rho\pi$ $D-wave$	seen	638	DESIG=4;OUR EST;→ UNCHECKED ←
$\omega\pi\pi$	seen	607	DESIG=5;OUR EST;→ UNCHECKED ←
$f_1(1285)\pi$	seen	309	DESIG=6;OUR EST;→ UNCHECKED ←
$a_1(1260)\eta$	not seen	†	DESIG=8

$\eta_2(1645)$

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

NODE=M154

Mass $m = 1617 \pm 5$ MeV

NODE=M154M;DTYPE=M

Full width $\Gamma = 181 \pm 11$ MeV

NODE=M154W;DTYPE=G

$\eta_2(1645)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$a_2(1320)\pi$	seen	243	NODE=M154215;DESIG=1;OUR EST; → UNCHECKED ←
$K\overline{K}\pi$	seen	580	DESIG=2;OUR EST;→ UNCHECKED ←
$K^*\overline{K}$	seen	404	DESIG=3;OUR EST;→ UNCHECKED ←
$\eta\pi^+\pi^-$	seen	685	DESIG=4;OUR EST;→ UNCHECKED ←
$a_0(980)\pi$	seen	499	DESIG=5;OUR EST;→ UNCHECKED ←
$f_2(1270)\eta$	not seen	†	DESIG=6;OUR EST;→ UNCHECKED ←

$\omega(1650)$ [f]

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

NODE=M126

Mass $m = 1670 \pm 30$ MeV [d]

NODE=M126M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 315 \pm 35$ MeV [d]

NODE=M126W;DTYPE=G;OUR EST; → UNCHECKED ←

$\omega(1650)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\rho\pi$	seen	647	NODE=M126215;DESIG=1;OUR EST; → UNCHECKED ←
$\rho(1450)\pi$	seen	145	DESIG=6
$\omega\pi\pi$	seen	617	DESIG=2;OUR EST;→ UNCHECKED ←
$\omega\eta$	seen	500	DESIG=4;OUR EST;→ UNCHECKED ←
e^+e^-	seen	835	DESIG=3;OUR EST;→ UNCHECKED ←
$\pi^0\gamma$	not seen	830	DESIG=5

$\omega_3(1670)$

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

NODE=M045

Mass $m = 1667 \pm 4$ MeV

NODE=M045M;DTYPE=M

Full width $\Gamma = 168 \pm 10$ MeV

NODE=M045W;DTYPE=G

$\omega_3(1670)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\rho\pi$	seen	645	NODE=M045215;DESIG=1;OUR EST; → UNCHECKED ←
$\omega\pi\pi$	seen	615	DESIG=2;OUR EST;→ UNCHECKED ←
$b_1(1235)\pi$	possibly seen	361	DESIG=3;OUR EST;→ UNCHECKED ←

$\pi_2(1670)$

$I^G(J^{PC}) = 1^-(2^{-+})$

NODE=M034

Mass $m = 1670.6^{+2.9}_{-1.2}$ MeV (S = 1.3)

NODE=M034M;DTYPE=M

Full width $\Gamma = 258^{+8}_{-9}$ MeV (S = 1.2)

NODE=M034W;DTYPE=G

$\pi_2(1670)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
3π	(95.8±1.4) %		808	NODE=M034215;DESIG=20
$f_2(1270)\pi$	(56.3±3.2) %		327	DESIG=8
$\rho\pi$	(31 ±4) %		647	DESIG=2
$\sigma\pi$	(10 ±4) %		–	DESIG=13
$\pi(\pi\pi)_{S\text{-wave}}$	(8.7±3.4) %		–	DESIG=11
$\pi^\pm\pi^+\pi^-$	(53 ±4) %		806	DESIG=10
$K\overline{K}^*(892)+$ c.c.	(4.2±1.4) %		453	DESIG=5
$\omega\rho$	(2.7±1.1) %		302	DESIG=14
$\pi^\pm\gamma$	(7.0±1.2) $\times 10^{-4}$		829	DESIG=27
$\gamma\gamma$	< 2.8 $\times 10^{-7}$	90%	835	DESIG=12
$\eta\pi$	< 5 %		739	DESIG=3
$\pi^\pm 2\pi^+ 2\pi^-$	< 5 %		735	DESIG=4
$\rho(1450)\pi$	< 3.6 $\times 10^{-3}$	97.7%	145	DESIG=15
$b_1(1235)\pi$	< 1.9 $\times 10^{-3}$	97.7%	364	DESIG=16
$f_1(1285)\pi$	possibly seen		322	DESIG=25
$a_2(1320)\pi$	not seen		292	DESIG=26

$\phi(1680)$

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

NODE=M067

Mass $m = 1680 \pm 20$ MeV [d]
Full width $\Gamma = 150 \pm 50$ MeV [d]

NODE=M067M1;DTYPE=M;OUR EST; → UNCHECKED ←
NODE=M067W1;DTYPE=G;OUR EST; → UNCHECKED ←

$\phi(1680)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\overline{K}^*(892)+$ c.c.	seen	462	NODE=M067215;DESIG=4;OUR EST; → UNCHECKED ←
$K^0_S K\pi$	seen	621	DESIG=5;OUR EST;→ UNCHECKED ←
$K\overline{K}$	seen	680	DESIG=3;OUR EST;→ UNCHECKED ←
e^+e^-	seen	840	DESIG=6;OUR EST;→ UNCHECKED ←
$\omega\pi\pi$	not seen	623	DESIG=1;OUR EST;→ UNCHECKED ←
$K^+K^-\pi^+\pi^-$	seen	544	DESIG=12;OUR EVAL;→ UNCHECKED ←
$\eta\phi$	seen	290	DESIG=10
$\eta\gamma$	seen	751	DESIG=13

$\rho_3(1690)$

$I^G(J^{PC}) = 1^+(3^{--})$

NODE=M015

Mass $m = 1688.8 \pm 2.1$ MeV
Full width $\Gamma = 161 \pm 10$ MeV (S = 1.5)

NODE=M015M;DTYPE=M
NODE=M015W;DTYPE=G

$\rho_3(1690)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor	p (MeV/c)	
4π	(71.1 ± 1.9) %		790	NODE=M015215;DESIG=2
$\pi^\pm\pi^+\pi^-\pi^0$	(67 ±22) %		787	DESIG=11
$\omega\pi$	(16 ± 6) %		655	DESIG=7
$\pi\pi$	(23.6 ± 1.3) %		834	DESIG=1
$K\overline{K}\pi$	(3.8 ± 1.2) %		629	DESIG=3
$K\overline{K}$	(1.58± 0.26) %	1.2	685	DESIG=4
$\eta\pi^+\pi^-$	seen		727	DESIG=13
$\rho(770)\eta$	seen		520	DESIG=14;OUR EST;→ UNCHECKED ←
$\pi\pi\rho$	seen		633	DESIG=5;OUR EST;→ UNCHECKED ←
$a_2(1320)\pi$	seen		308	DESIG=6;OUR EST;→ UNCHECKED ←
$\rho\rho$	seen		335	DESIG=8;OUR EST;→ UNCHECKED ←

$\rho(1700)$

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

NODE=M065

See the note in $\rho(1700)$ Particle Listings.
Mass $m = 1720 \pm 20$ MeV [d] ($\eta\rho^0$ and $\pi^+\pi^-$ modes)
Full width $\Gamma = 250 \pm 100$ MeV [d] ($\eta\rho^0$ and $\pi^+\pi^-$ modes)

NODE=M065M0;DTYPE=M;OUR EST; → UNCHECKED ←
NODE=M065W0;DTYPE=G;OUR EST; → UNCHECKED ←

$\rho(1700)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$2(\pi^+\pi^-)$	seen	803	NODE=M065215;DESIG=2;OUR EST; → UNCHECKED ←
$\rho\pi\pi$	seen	653	DESIG=12;OUR EST;→ UNCHECKED ←
$\rho^0\pi^+\pi^-$	seen	651	DESIG=1;OUR EST;→ UNCHECKED ←
$\rho^\pm\pi^\mp\pi^0$	seen	652	DESIG=9;OUR EST;→ UNCHECKED ←
$a_1(1260)\pi$	seen	404	DESIG=15;OUR EST;→ UNCHECKED ←
$h_1(1170)\pi$	seen	450	DESIG=16;OUR EST;→ UNCHECKED ←
$\pi(1300)\pi$	seen	349	DESIG=17;OUR EST;→ UNCHECKED ←
$\rho\rho$	seen	372	DESIG=18;OUR EST;→ UNCHECKED ←
$\pi^+\pi^-$	seen	849	DESIG=4;OUR EST;→ UNCHECKED ←
$\pi\pi$	seen	849	DESIG=13;OUR EST;→ UNCHECKED ←
$K\overline{K}^*(892)+$ c.c.	seen	496	DESIG=10;OUR EST;→ UNCHECKED ←
$\eta\rho$	seen	545	DESIG=11;OUR EST;→ UNCHECKED ←
$a_2(1320)\pi$	not seen	335	DESIG=14;OUR EST;→ UNCHECKED ←
$K\overline{K}$	seen	704	DESIG=5;OUR EST;→ UNCHECKED ←
e^+e^-	seen	860	DESIG=8;OUR EST;→ UNCHECKED ←
$\pi^0\omega$	seen	674	DESIG=6;OUR EST;→ UNCHECKED ←
$\pi^0\gamma$	not seen	855	DESIG=194

$a_2(1700)$

$I^G(J^{PC}) = 1^-(2^{++})$

NODE=M162

Mass $m = 1698 \pm 40$ MeV

NODE=M162M;DTYPE=M

Full width $\Gamma = 265 \pm 60$ MeV

NODE=M162W;DTYPE=G

$a_2(1700)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\eta\pi$	(3.6 ±1.1) %	758	NODE=M162215;DESIG=4
$\gamma\gamma$	$(1.13\pm0.30)\times10^{-6}$	852	DESIG=1
$\rho\pi$	seen	668	DESIG=2;OUR EVAL;→ UNCHECKED ←
$f_2(1270)\pi$	seen	356	DESIG=3;OUR EVAL;→ UNCHECKED ←
$K\overline{K}$	(1.9 ±1.2) %	695	DESIG=5
$\omega\pi^-\pi^0$	seen	638	DESIG=6;OUR EVAL;→ UNCHECKED ←
$\omega\rho$	seen	346	DESIG=7;OUR EVAL;→ UNCHECKED ←

$f_0(1710)$

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

NODE=M068

See the review on "Non-$q\overline{q}$ Mesons."

Mass $m = 1704 \pm 12$ MeV

NODE=M068M;DTYPE=M;OUR EVAL; → UNCHECKED ←

Full width $\Gamma = 123 \pm 18$ MeV

NODE=M068W;DTYPE=G;OUR EVAL; → UNCHECKED ←

$f_0(1710)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\overline{K}$	seen	694	NODE=M068215;DESIG=2;OUR EST; → UNCHECKED ←
$\eta\eta$	seen	652	DESIG=1;OUR EST;→ UNCHECKED ←
$\pi\pi$	seen	841	DESIG=5;OUR EST;→ UNCHECKED ←
$\gamma\gamma$	seen	852	DESIG=6;OUR EST;→ UNCHECKED ←
$\omega\omega$	seen	337	DESIG=4

$\pi(1800)$

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

NODE=M075

Mass $m = 1810^{+\ 9}_{-11}$ MeV (S = 2.2)

NODE=M075M;DTYPE=M

Full width $\Gamma = 215^{+7}_{-8}$ MeV

NODE=M075W;DTYPE=G

π(1800) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi^+\pi^-\pi^-$	seen	878	NODE=M075215;DESIG=10;OUR EST; → UNCHECKED ←
$f_0(500)\pi^-$	seen	–	DESIG=11;OUR EST;→ UNCHECKED ←
$f_0(980)\pi^-$	seen	624	DESIG=3;OUR EST;→ UNCHECKED ←
$f_0(1370)\pi^-$	seen	366	DESIG=1
$f_0(1500)\pi^-$	not seen	247	DESIG=12
$\rho\pi^-$	not seen	731	DESIG=2
$\eta\eta\pi^-$	seen	660	DESIG=7;OUR EST;→ UNCHECKED ←
$a_0(980)\eta$	seen	471	DESIG=5;OUR EST;→ UNCHECKED ←
$a_2(1320)\eta$	not seen	†	DESIG=13
$f_2(1270)\pi$	not seen	441	DESIG=14
$f_0(1370)\pi^-$	not seen	366	DESIG=15
$f_0(1500)\pi^-$	seen	247	DESIG=6;OUR EST;→ UNCHECKED ←
$\eta\eta'(958)\pi^-$	seen	373	DESIG=8;OUR EST;→ UNCHECKED ←
$K_0^*(1430)K^-$	seen	†	DESIG=4
$K^*(892)K^-$	not seen	568	DESIG=9

$\phi_3(1850)$

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

NODE=M054

Mass $m = 1854 \pm 7$ MeV

NODE=M054M;DTYPE=M

Full width $\Gamma = 87^{+28}_{-23}$ MeV (S = 1.2)

NODE=M054W;DTYPE=G

ϕ_3(1850) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\overline{K}$	seen	785	NODE=M054215;DESIG=1;OUR EST; → UNCHECKED ←
$K\overline{K}^*(892)+$ c.c.	seen	602	DESIG=2;OUR EST;→ UNCHECKED ←

$\eta_2(1870)$

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

NODE=M101

Mass $m = 1842 \pm 8$ MeV

NODE=M101M;DTYPE=M

Full width $\Gamma = 225 \pm 14$ MeV

NODE=M101W;DTYPE=G

η_2(1870) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\gamma\gamma$	seen	921	NODE=M101225;DESIG=9

$\pi_2(1880)$

$I^G(J^{PC}) = 1^-(2^{-+})$

NODE=M185

Mass $m = 1874^{+26}_{-5}$ MeV (S = 1.6)

NODE=M185M;DTYPE=M

Full width $\Gamma = 237^{+33}_{-30}$ MeV (S = 1.2)

NODE=M185W;DTYPE=G

$f_2(1950)$

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

NODE=M135

Mass $m = 1936 \pm 12$ MeV (S = 1.3)

NODE=M135M;DTYPE=M

Full width $\Gamma = 464 \pm 24$ MeV

NODE=M135W;DTYPE=G

$f_2(1950)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K^*(892)\overline{K}^*(892)$	seen	377	NODE=M135215;DESIG=1
$\pi^+\pi^-$	seen	958	DESIG=2;OUR EST;→ UNCHECKED ←
$\pi^0\pi^0$	seen	959	DESIG=10;OUR EST;→ UNCHECKED ←
4π	seen	921	DESIG=7;OUR EST;→ UNCHECKED ←
$\eta\eta$	seen	798	DESIG=6;OUR EST;→ UNCHECKED ←
$K\overline{K}$	seen	833	DESIG=8;OUR EST;→ UNCHECKED ←
$\gamma\gamma$	seen	968	DESIG=9;OUR EST;→ UNCHECKED ←
$p\overline{p}$	seen	238	DESIG=12

$a_4(1970)$

$I^G(J^{PC}) = 1^-(4^{++})$

NODE=M017

was $a_4(2040)$

Mass $m = 1967 \pm 16$ MeV (S = 2.1)

NODE=M017M;DTYPE=M

Full width $\Gamma = 324^{+15}_{-18}$ MeV

NODE=M017W;DTYPE=G

$a_4(1970)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\overline{K}$	seen	851	NODE=M017215;DESIG=1
$\pi^+\pi^-\pi^0$	seen	959	DESIG=2
$\rho\pi$	seen	825	DESIG=5;OUR EST;→ UNCHECKED ←
$f_2(1270)\pi$	seen	559	DESIG=6;OUR EST;→ UNCHECKED ←
$\omega\pi^-\pi^0$	seen	801	DESIG=7;OUR EST;→ UNCHECKED ←
$\omega\rho$	seen	601	DESIG=8
$\eta\pi$	seen	902	DESIG=3
$\eta'(958)\pi$	seen	743	DESIG=4;OUR EST;→ UNCHECKED ←

$f_2(2010)$

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

NODE=M106

Mass $m = 2011^{+60}_{-80}$ MeV

NODE=M106M;DTYPE=M

Full width $\Gamma = 202 \pm 60$ MeV

NODE=M106W;DTYPE=G

$f_2(2010)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\phi\phi$	seen	†	NODE=M106215;DESIG=1;OUR EST; → UNCHECKED ←
$K\overline{K}$	seen	876	DESIG=2

$f_4(2050)$

$I^G(J^{PC}) = 0^+(4^{++})$

NODE=M016

Mass $m = 2018 \pm 11$ MeV (S = 2.1)

NODE=M016M;DTYPE=M

Full width $\Gamma = 237 \pm 18$ MeV (S = 1.9)

NODE=M016W;DTYPE=G

$f_4(2050)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\omega\omega$	seen	637	NODE=M016215;DESIG=6
$\pi\pi$	(17.0±1.5) %	1000	DESIG=1
$K\overline{K}$	$(\ 6.8^{+3.4}_{-1.8}) \times 10^{-3}$	880	DESIG=2
$\eta\eta$	$(\ 2.1 \pm 0.8) \times 10^{-3}$	848	DESIG=3
$4\pi^0$	< 1.2 %	964	DESIG=5
$a_2(1320)\pi$	seen	568	DESIG=7

$\phi(2170)$

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

NODE=M103

Mass $m = 2159 \pm 17$ MeV [d] (S = 1.4)

NODE=M103M;DTYPE=M

Full width $\Gamma = 137 \pm 16$ MeV [d]

NODE=M103W;DTYPE=G

$\phi(2170)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
e^+e^-	seen	1080	NODE=M103215;DESIG=1;OUR EVAL;
$\phi f_0(980)$	seen	395	→ UNCHECKED ← DESIG=2;OUR EVAL;→ UNCHECKED ←
$K^+K^-f_0(980) \rightarrow K^+K^-\pi^+\pi^-$	seen	–	DESIG=6
$K^+K^-f_0(980) \rightarrow K^+K^-\pi^0\pi^0$	seen	–	DESIG=7
$K^{*0}K^\pm\pi^\mp$	not seen	759	DESIG=8
$K^*(892)^0\overline{K}^*(892)^0$	not seen	609	DESIG=10

$f_2(2300)$

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

NODE=M107

Mass $m = 2297 \pm 28$ MeV

NODE=M107M;DTYPE=M

Full width $\Gamma = 149 \pm 40$ MeV

NODE=M107W;DTYPE=G

$f_2(2300)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\phi\phi$	seen	529	NODE=M107215;DESIG=1;OUR EST;
$K\overline{K}$	seen	1037	→ UNCHECKED ← DESIG=2;OUR EST;→ UNCHECKED ←
$\gamma\gamma$	seen	1149	DESIG=3;OUR EST;→ UNCHECKED ←

$f_2(2340)$

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

NODE=M108

Mass $m = 2345^{+50}_{-40}$ MeV

NODE=M108M;DTYPE=M

Full width $\Gamma = 322^{+70}_{-60}$ MeV

NODE=M108W;DTYPE=G

$f_2(2340)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\phi\phi$	seen	580	NODE=M108215;DESIG=1;OUR EST;
$\eta\eta$	seen	1037	→ UNCHECKED ← DESIG=2

STRANGE MESONS ($S = \pm 1$, $C = B = 0$)

$K^+ = u\bar{s}$, $K^0 = d\bar{s}$, $\overline{K}^0 = \overline{d}s$, $K^- = \overline{u}s$, similarly for K^*'s

NODE=MXXX020

$K_0^*(700)$

$I(J^P) = \frac{1}{2}(0^+)$

NODE=M174

also known as κ; was $K_0^*(800)$

Mass (T-Matrix Pole $\sqrt{s}$) = (630–730) $- i$ (260–340) MeV

NODE=M174TMP;DTYPE=M;OUR EVAL;

Mass (Breit-Wigner) = 824 ± 30 MeV

→ UNCHECKED ← NODE=M174M;DTYPE=M

Full width (Breit-Wigner) = 478 ± 50 MeV

NODE=M174W;DTYPE=G

$K_0^*(700)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\pi$	100 %	240	NODE=M174215;DESIG=1;OUR EVAL; → UNCHECKED ←

$K^*(892)$

$I(J^P) = \frac{1}{2}(1^-)$

NODE=M018

Mass (T-Matrix Pole $\sqrt{s}$) = (890 ± 14) $- i$ (26 ± 6) MeV

NODE=M018TMP;DTYPE=M;OUR EST;

$K^*(892)^\pm$ hadroproduced mass $m = 891.67 \pm 0.26$ MeV

→ UNCHECKED ← NODE=M018M1;DTYPE=M

$K^*(892)^\pm$ in τ decays mass $m = 895.5 \pm 0.8$ MeV

NODE=M018MCT;DTYPE=M

$K^*(892)^0$ mass $m = 895.55 \pm 0.20$ MeV (S = 1.7)

NODE=M018M2;DTYPE=M

$K^*(892)^\pm$ hadroproduced full width $\Gamma = 51.4 \pm 0.8$ MeV

NODE=M018W1;DTYPE=G

$K^*(892)^\pm$ in τ decays full width $\Gamma = 46.2 \pm 1.3$ MeV

NODE=M018W5;DTYPE=G

$K^*(892)^0$ full width $\Gamma = 47.3 \pm 0.5$ MeV (S = 1.9)

NODE=M018W2;DTYPE=G

$K^*(892)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$K\pi$	$\sim$ 100 %		289	NODE=M018220;DESIG=1;OUR EVAL; → UNCHECKED ←
$K^0\gamma$	(2.46±0.21) × 10^{-3}		307	DESIG=4
$K^\pm\gamma$	(9.8 ±0.9) × 10^{-4}		309	DESIG=3
$K\pi\pi$	< 7 × 10^{-4}	95%	223	DESIG=2

$K_1(1270)$ $I(J^P) = \frac{1}{2}(1^+)$

NODE=M028

Mass $m = 1253 \pm 7$ MeV [d] (S = 2.2)

NODE=M028MX;DTYPE=M

Full width $\Gamma = 90 \pm 20$ MeV [d]

NODE=M028WX;DTYPE=G;OUR EST; → UNCHECKED ←

$K_1(1270)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\rho$	(42 ±6) %	†	NODE=M028215;DESIG=2
$K_0^*(1430)\pi$	(28 ±4) %	†	DESIG=7
$K^*(892)\pi$	(16 ±5) %	286	DESIG=1
$K\omega$	(11.0±2.0) %	†	DESIG=5
$Kf_0(1370)$	(3.0±2.0) %	†	DESIG=8
γK^0	seen	528	DESIG=9;OUR EST;→ UNCHECKED ←

$K_1(1400)$ $I(J^P) = \frac{1}{2}(1^+)$

NODE=M064

Mass $m = 1403 \pm 7$ MeV

NODE=M064M;DTYPE=M

Full width $\Gamma = 174 \pm 13$ MeV (S = 1.6)

NODE=M064W;DTYPE=G

$K_1(1400)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K^*(892)\pi$	(94 ±6) %	402	NODE=M064215;DESIG=1
$K\rho$	(3.0±3.0) %	293	DESIG=2
$Kf_0(1370)$	(2.0±2.0) %	†	DESIG=8
$K\omega$	(1.0±1.0) %	284	DESIG=5
$K_0^*(1430)\pi$	not seen	†	DESIG=7;OUR EST;→ UNCHECKED ←
γK^0	seen	613	DESIG=9;OUR EST;→ UNCHECKED ←

$K^*(1410)$ $I(J^P) = \frac{1}{2}(1^-)$

NODE=M094

Mass $m = 1414 \pm 15$ MeV (S = 1.3)

NODE=M094M;DTYPE=M

Full width $\Gamma = 232 \pm 21$ MeV (S = 1.1)

NODE=M094W;DTYPE=G

$K^*(1410)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$K^*(892)\pi$	> 40 %	95%	410	NODE=M094215;DESIG=2
$K\pi$	(6.6±1.3) %		612	DESIG=1
$K\rho$	< 7 %	95%	305	DESIG=3;OUR EST;→ UNCHECKED ←
γK^0	< 2.3 × 10^{-4}	90%	619	DESIG=4

$K_0^*(1430)$ [g] $I(J^P) = \frac{1}{2}(0^+)$

NODE=M019

Mass $m = 1425 \pm 50$ MeV

NODE=M019M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 270 \pm 80$ MeV

NODE=M019W;DTYPE=G;OUR EST; → UNCHECKED ←

$K_0^*(1430)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\pi$	(93 ±10) %	619	NODE=M019215;DESIG=1
$K\eta$	($8.6^{+\ 2.7}_{-\ 3.4}$) %	486	DESIG=2
$K\eta'(958)$	seen	†	DESIG=3

$K_2^*(1430)$ $I(J^P) = \frac{1}{2}(2^+)$

NODE=M022

$K_2^*(1430)^\pm$ mass $m = 1427.3 \pm 1.5$ MeV (S = 1.3) NODE=M022M1;DTYPE=M
$K_2^*(1430)^0$ mass $m = 1432.4 \pm 1.3$ MeV NODE=M022M4;DTYPE=M
$K_2^*(1430)^\pm$ full width $\Gamma = 100.0 \pm 2.1$ MeV NODE=M022W1;DTYPE=G
$K_2^*(1430)^0$ full width $\Gamma = 109 \pm 5$ MeV (S = 1.9) NODE=M022W4;DTYPE=G

$K_2^*(1430)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$K\pi$	(49.9±1.2) %		620	NODE=M022215;DESIG=1
$K^*(892)\pi$	(24.7±1.5) %		420	DESIG=2
$K^*(892)\pi\pi$	(13.4±2.2) %		373	DESIG=6
$K\rho$	(8.7±0.8) %	S=1.2	320	DESIG=3
$K\omega$	(2.9±0.8) %		313	DESIG=4
$K^+\gamma$	(2.4±0.5) $\times 10^{-3}$	S=1.1	628	DESIG=8
$K\eta$	($1.5^{+3.4}_{-1.0}$) $\times 10^{-3}$	S=1.3	488	DESIG=5
$K\omega\pi$	< 7.2 $\times 10^{-4}$	CL=95%	106	DESIG=7
$K^0\gamma$	< 9 $\times 10^{-4}$	CL=90%	627	DESIG=10;OUR EVAL;→ UNCHECKED ←

$K^*(1680)$ $I(J^P) = \frac{1}{2}(1^-)$

NODE=M095

Mass $m = 1718 \pm 18$ MeV NODE=M095M;DTYPE=M
Full width $\Gamma = 322 \pm 110$ MeV (S = 4.2) NODE=M095W;DTYPE=G

$K^*(1680)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\pi$	(38.7±2.5) %	782	NODE=M095215;DESIG=1
$K\rho$	($31.4^{+5.0}_{-2.1}$) %	571	DESIG=3
$K^*(892)\pi$	($29.9^{+2.2}_{-5.0}$) %	618	DESIG=2
$K\phi$	seen	387	DESIG=4
$K\eta$	($1.4^{+1.0}_{-0.8}$) %	683	DESIG=6

$K_2(1770)$ [h] $I(J^P) = \frac{1}{2}(2^-)$

NODE=M023

Mass $m = 1773 \pm 8$ MeV NODE=M023M;DTYPE=M
Full width $\Gamma = 186 \pm 14$ MeV NODE=M023W;DTYPE=G

$K_2(1770)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\pi\pi$		794	NODE=M023215;DESIG=1;OUR EST; → UNCHECKED ←
$K_2^*(1430)\pi$	seen	287	DESIG=2;OUR EST;→ UNCHECKED ←
$K^*(892)\pi$	seen	654	DESIG=4;OUR EST;→ UNCHECKED ←
$Kf_2(1270)$	seen	53	DESIG=9;OUR EST;→ UNCHECKED ←
$K\phi$	seen	441	DESIG=10
$K\omega$	seen	607	DESIG=8

$K_3^*(1780)$ $I(J^P) = \frac{1}{2}(3^-)$

NODE=M060

Mass $m = 1779 \pm 8$ MeV (S = 1.2) NODE=M060M;DTYPE=M
Full width $\Gamma = 161 \pm 17$ MeV (S = 1.1) NODE=M060W;DTYPE=G

$K_3^*(1780)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$K\rho$	(31 ± 9) %		616	NODE=M060215;DESIG=3
$K^*(892)\pi$	(20 ± 5) %		657	DESIG=2
$K\pi$	(18.8± 1.0) %		815	DESIG=1
$K\eta$	(30 ±13) %		721	DESIG=6
$K_2^*(1430)\pi$	< 16 %	95%	292	DESIG=4

$K_2(1820)$ [i]

$I(J^P) = \frac{1}{2}(2^-)$

NODE=M146

Mass $m = 1819 \pm 12$ MeV — NODE=M146M;DTYPE=M

Full width $\Gamma = 264 \pm 34$ MeV — NODE=M146W;DTYPE=G

$K_2(1820)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K_2^*(1430)\pi$	seen	328	NODE=M146215;DESIG=1;OUR EVAL; → UNCHECKED ←
$K^*(892)\pi$	seen	683	DESIG=2;OUR EVAL;→ UNCHECKED ←
$Kf_2(1270)$	seen	191	DESIG=3;OUR EVAL;→ UNCHECKED ←
$K\omega$	seen	640	DESIG=6;OUR EVAL;→ UNCHECKED ←
$K\phi$	seen	483	DESIG=7

$K_4^*(2045)$

$I(J^P) = \frac{1}{2}(4^+)$

NODE=M035

Mass $m = 2048^{+8}_{-9}$ MeV (S = 1.1) — NODE=M035M;DTYPE=M

Full width $\Gamma = 199^{+27}_{-19}$ MeV — NODE=M035W;DTYPE=G

$K_4^*(2045)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$K\pi$	(9.9±1.2) %	960	NODE=M035215;DESIG=1
$K^*(892)\pi\pi$	(9 ±5) %	804	DESIG=2
$K^*(892)\pi\pi\pi$	(7 ±5) %	770	DESIG=5
$\rho K\pi$	(5.7±3.2) %	744	DESIG=3
$\omega K\pi$	(5.0±3.0) %	740	DESIG=4
$\phi K\pi$	(2.8±1.4) %	597	DESIG=6
$\phi K^*(892)$	(1.4±0.7) %	368	DESIG=7

CHARMED MESONS ($C = \pm 1$)

$D^+ = c\overline{d}$, $D^0 = c\overline{u}$, $\overline{D}^0 = \overline{c}u$, $D^- = \overline{c}d$, similarly for D^*'s

NODE=MXXX035

$D^*(2007)^0$

$I(J^P) = \frac{1}{2}(1^-)$

I, J, P need confirmation.

NODE=M061

Mass $m = 2006.85 \pm 0.05$ MeV (S = 1.1) — NODE=M061M;DTYPE=M

$m_{D^{*0}} - m_{D^0} = 142.014 \pm 0.030$ MeV (S = 1.5) — NODE=M061DM;DTYPE=D

Full width $\Gamma < 2.1$ MeV, CL = 90% — NODE=M061W;DTYPE=G

$\overline{D}^*(2007)^0$ modes are charge conjugates of modes below. NODE=M061220;NODE=M061

$D^*(2007)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D^0\pi^0$	(64.7±0.9) %	43	DESIG=1
$D^0\gamma$	(35.3±0.9) %	137	DESIG=2

$D^*(2010)^\pm$

$I(J^P) = \frac{1}{2}(1^-)$
I, J, P need confirmation. NODE=M062

Mass $m = 2010.26 \pm 0.05$ MeV NODE=M062M;DTYPE=M
$m_{D^*(2010)^+} - m_{D^+} = 140.603 \pm 0.015$ MeV NODE=M062MD;DTYPE=D
$m_{D^*(2010)^+} - m_{D^0} = 145.4257 \pm 0.0017$ MeV NODE=M062DM;DTYPE=D
Full width $\Gamma = 83.4 \pm 1.8$ keV NODE=M062W;DTYPE=G

$D^*(2010)^-$ modes are charge conjugates of the modes below. NODE=M062225;NODE=M062

$D^*(2010)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D^0\pi^+$	(67.7±0.5) %	39	DESIG=1
$D^+\pi^0$	(30.7±0.5) %	38	DESIG=3
$D^+\gamma$	(1.6±0.4) %	136	DESIG=2

$D_0^*(2300)^0$

$I(J^P) = \frac{1}{2}(0^+)$ NODE=M178

was $D_0^*(2400)^0$

Mass $m = 2300 \pm 19$ MeV NODE=M178M;DTYPE=M
Full width $\Gamma = 274 \pm 40$ MeV NODE=M178W;DTYPE=G

$D_0^*(2300)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D^+\pi^-$	seen	369	NODE=M178215;DESIG=1;OUR EVAL; → UNCHECKED ←

$D_0^*(2300)$

$I(J^P) = \frac{1}{2}(0^+)$ NODE=M252

was $D_0^*(2400)$

Mass $m = 2343 \pm 10$ MeV (S = 1.5) NODE=M252M;DTYPE=M
Full width $\Gamma = 229 \pm 16$ MeV NODE=M252W;DTYPE=G

$D_0^*(2300)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D\pi^\pm$	seen	411	NODE=M252215;DESIG=1

$D_1(2420)^0$

$I(J^P) = \frac{1}{2}(1^+)$ NODE=M097

Mass $m = 2421.8 \pm 0.6$ MeV (S = 1.8) NODE=M097M;DTYPE=M
$m_{D_1^0} - m_{D^{*+}} = 411.5 \pm 0.6$ MeV (S = 1.7) NODE=M097DM;DTYPE=D
Full width $\Gamma = 31.8 \pm 2.2$ MeV (S = 3.1) NODE=M097W;DTYPE=G

$\overline{D}_1(2420)^0$ modes are charge conjugates of modes below. NODE=M097215;NODE=M097

$D_1(2420)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D^*(2010)^+\pi^-$	seen	354	DESIG=1
$D^0\pi^+\pi^-$	seen	426	DESIG=3;OUR EST;→ UNCHECKED ←
$D^+\pi^-$	not seen	473	DESIG=2;OUR EST;→ UNCHECKED ←
$D^{*0}\pi^+\pi^-$	not seen	280	DESIG=7;OUR EST;→ UNCHECKED ←

$D_1(2430)^0$

$I(J^P) = \frac{1}{2}(1^+)$ NODE=M180

Mass $m = 2412 \pm 9$ MeV NODE=M180M;DTYPE=M
Full width $\Gamma = 314 \pm 29$ MeV NODE=M180W;DTYPE=G

$D_1(2430)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D^*(2010)^+\pi^-$	seen	345	NODE=M180215;DESIG=1;OUR EVAL; → UNCHECKED ←

$D_2^*(2460)^0$

$I(J^P) = \frac{1}{2}(2^+)$ NODE=M119

$J^P = 2^+$ assignment strongly favored.

Mass $m = 2460.7 \pm 0.4$ MeV (S = 2.9) NODE=M119M;DTYPE=M
$m_{D_2^{*0}} - m_{D^+} = 591.0 \pm 0.4$ MeV (S = 2.8) NODE=M119DM;DTYPE=D
$m_{D_2^{*0}} - m_{D^{*+}} = 450.4 \pm 0.4$ MeV (S = 2.8) NODE=M119DM2;DTYPE=D
Full width $\Gamma = 47.4 \pm 1.0$ MeV (S = 1.7) NODE=M119W;DTYPE=G

$\overline{D}_2^*(2460)^0$ modes are charge conjugates of modes below. NODE=M119215;NODE=M119

$D_2^*(2460)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D^+\pi^-$	seen	505	CLUMP=A;DESIG=1
$D^*(2010)^+\pi^-$	seen	389	DESIG=2
$D^0\pi^+\pi^-$	not seen	462	DESIG=3;OUR EST;→ UNCHECKED ←
$D^{*0}\pi^+\pi^-$	not seen	324	DESIG=4;OUR EST;→ UNCHECKED ←

$D_2^*(2460)^\pm$

$I(J^P) = \frac{1}{2}(2^+)$ NODE=M150

$J^P = 2^+$ assignment strongly favored.

Mass $m = 2465.4 \pm 1.3$ MeV (S = 3.1) NODE=M150M;DTYPE=M
$m_{D_2^*(2460)^\pm} - m_{D_2^*(2460)^0} = 2.4 \pm 1.7$ MeV NODE=M150DM;DTYPE=D
Full width $\Gamma = 46.7 \pm 1.2$ MeV NODE=M150W;DTYPE=G

$D_2^*(2460)^-$ modes are charge conjugates of modes below. NODE=M150215;NODE=M150

$D_2^*(2460)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D^0\pi^+$	seen	513	DESIG=1
$D^{*0}\pi^+$	seen	396	DESIG=2;OUR EST;→ UNCHECKED ←
$D^+\pi^+\pi^-$	not seen	462	DESIG=3;OUR EST;→ UNCHECKED ←
$D^{*+}\pi^+\pi^-$	not seen	326	DESIG=4;OUR EST;→ UNCHECKED ←

$D_3^*(2750)$

$I(J^P) = \frac{1}{2}(3^-)$ NODE=M203

Mass $m = 2763.1 \pm 3.2$ MeV (S = 2.1) NODE=M203M;DTYPE=M
Full width $\Gamma = 66 \pm 5$ MeV NODE=M203W;DTYPE=G

$D_3^*(2750)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D\pi$	seen	743	NODE=M203215;DESIG=1;OUR EVAL; → UNCHECKED ←
$D^+\pi^-$	seen	739	DESIG=2;OUR EVAL;→ UNCHECKED ←
$D^0\pi^\pm$	seen	743	DESIG=3;OUR EVAL;→ UNCHECKED ←
$D^*\pi$	seen	639	DESIG=4;OUR EVAL;→ UNCHECKED ←
$D^{*+}\pi^-$	seen	639	DESIG=5;OUR EVAL;→ UNCHECKED ←

CHARMED, STRANGE MESONS ($C = S = \pm 1$) (including possibly non-$q\bar{q}$ states)

NODE=MXXX040

$D_s^+ = c\bar{s}$, $D_s^- = \bar{c}s$, similarly for D_s^*'s

$D_s^{*\pm}$

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

NODE=S074

J^P is natural, width and decay modes consistent with 1^-.

Mass $m = 2112.2 \pm 0.4$ MeV — NODE=S074M;DTYPE=M

$m_{D_s^{*\pm}} - m_{D_s^\pm} = 143.8 \pm 0.4$ MeV — NODE=S074DM;DTYPE=D

Full width $\Gamma < 1.9$ MeV, CL = 90% — NODE=S074W;DTYPE=G

D_s^{*-} modes are charge conjugates of the modes below. — NODE=S074215;NODE=S074

D_s^{*+} DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$D_s^+\gamma$	(93.5±0.7) %	139	DESIG=1
$D_s^+\pi^0$	(5.8±0.7) %	48	DESIG=2
$D_s^+ e^+ e^-$	(6.7±1.6) × 10^{-3}	139	DESIG=3

$D_{s0}^*(2317)^\pm$

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

J, P need confirmation. — NODE=M172

J^P is natural, low mass consistent with 0^+.

Mass $m = 2317.8 \pm 0.5$ MeV — NODE=M172M;DTYPE=M

$m_{D_{s0}^*(2317)^\pm} - m_{D_s^\pm} = 349.4 \pm 0.5$ MeV — NODE=M172DM;DTYPE=D

Full width $\Gamma < 3.8$ MeV, CL = 95% — NODE=M172W;DTYPE=G

$D_{s0}^*(2317)^-$ modes are charge conjugates of modes below. — NODE=M172215;NODE=M172

$D_{s0}^*(2317)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$D_s^+\pi^0$	(100^{+0}_{-20}) %		298	DESIG=1
$D_s^+\gamma$	< 5 %	90%	323	DESIG=2
$D_s^*(2112)^+\gamma$	< 6 %	90%	–	DESIG=3
$D_s^+\gamma\gamma$	< 18 %	95%	323	DESIG=4
$D_s^*(2112)^+\pi^0$	< 11 %	90%	–	DESIG=5
$D_s^+\pi^+\pi^-$	< 4 × 10^{-3}	90%	194	DESIG=6
$D_s^+\pi^0\pi^0$	not seen		205	DESIG=7;OUR EVAL;→ UNCHECKED ←

$D_{s1}(2460)^\pm$

$I(J^P) = 0(1^+)$

NODE=M173

Mass $m = 2459.5 \pm 0.6$ MeV (S = 1.1) — NODE=M173M;DTYPE=M

$m_{D_{s1}(2460)^\pm} - m_{D_s^{*\pm}} = 347.3 \pm 0.7$ MeV (S = 1.2) — NODE=M173MD;DTYPE=D

$m_{D_{s1}(2460)^\pm} - m_{D_s^\pm} = 491.2 \pm 0.6$ MeV (S = 1.1) — NODE=M173DM;DTYPE=D

Full width $\Gamma < 3.5$ MeV, CL = 95% — NODE=M173W;DTYPE=G

$D_{s1}(2460)^-$ modes are charge conjugates of the modes below. NODE=M173215;NODE=M173

$D_{s1}(2460)^+$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$D_s^{*+}\pi^0$	(48 ±11) %		297	DESIG=1
$D_s^+\gamma$	(18 ± 4) %		442	DESIG=2
$D_s^+\pi^+\pi^-$	(4.3± 1.3) %	S=1.1	363	DESIG=3
$D_s^{*+}\gamma$	< 8 %	CL=90%	323	DESIG=4
$D_{s0}^*(2317)^+\gamma$	($3.7^{+\ 5.0}_{-\ 2.4}$) %		138	DESIG=5

$D_{s1}(2536)^\pm$

$I(J^P) = 0(1^+)$
J, P need confirmation. NODE=M121

Mass $m = 2535.11 \pm 0.06$ MeV NODE=M121M;DTYPE=M
Full width $\Gamma = 0.92 \pm 0.05$ MeV NODE=M121W;DTYPE=G

$D_{s1}(2536)^-$ modes are charge conjugates of the modes below. NODE=M121215;NODE=M121

$D_{s1}(2536)^+$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$D^*(2010)^+K^0$	0.85 ±0.12		149	DESIG=1
$(D^*(2010)^+K^0)_{S-wave}$	0.61 ±0.09		149	DESIG=7
$D^+\pi^-K^+$	0.028±0.005		176	DESIG=8
$D^*(2007)^0K^+$	**DEFINED AS 1**		167	DESIG=4
D^+K^0	<0.34	90%	381	DESIG=2
D^0K^+	<0.12	90%	391	DESIG=5
$D_s^{*+}\gamma$	possibly seen		388	DESIG=3
$D_s^+\pi^+\pi^-$	seen		437	DESIG=6

$D_{s2}^*(2573)$

$I(J^P) = 0(2^+)$ NODE=M148

J^P is natural, width and decay modes consistent with 2^+.

Mass $m = 2569.1 \pm 0.8$ MeV (S = 2.4) NODE=M148M;DTYPE=M
Full width $\Gamma = 16.9 \pm 0.7$ MeV NODE=M148W;DTYPE=G

$D_{s2}^*(2573)^-$ modes are charge conjugates of the modes below. NODE=M148215;NODE=M148

$D_{s2}^*(2573)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
D^0K^+	seen	431	DESIG=1
$D^*(2007)^0K^+$	not seen	238	DESIG=2;OUR EVAL;→ UNCHECKED ←

$D_{s1}^*(2700)^\pm$

$I(J^P) = 0(1^-)$ NODE=M182

Mass $m = 2714 \pm 5$ MeV (S = 1.5) NODE=M182M;DTYPE=M
Full width $\Gamma = 122 \pm 10$ MeV NODE=M182W;DTYPE=G

BOTTOM MESONS ($B = \pm 1$)

$B^+ = u\overline{b}$, $B^0 = d\overline{b}$, $\overline{B}^0 = \overline{d}\,b$, $B^- = \overline{u}\,b$, similarly for B^*'s

NODE=MXXX045

$B_1(5721)$

$I(J^P) = \frac{1}{2}(1^+)$
I, J, P need confirmation.

NODE=M244

$B_1(5721)^+$ mass = $5725.9^{+2.5}_{-2.7}$ MeV
NODE=M244M+;DTYPE=M

$m_{B_1^+} - m_{B^{*0}} = 401.2^{+2.4}_{-2.7}$ MeV
NODE=M244DM+;DTYPE=D

$B_1(5721)^0$ mass = 5726.1 ± 1.3 MeV (S = 1.2)
NODE=M244M0;DTYPE=M

$m_{B_1^0} - m_{B^+} = 446.7 \pm 1.3$ MeV (S = 1.2)
NODE=M244DM0;DTYPE=D

$m_{B_1^0} - m_{B^{*+}} = 401.4 \pm 1.2$ MeV (S = 1.2)
NODE=M244DM1;DTYPE=D

Full width $\Gamma(B_1(5721)^+) = 31 \pm 6$ MeV (S = 1.1)
NODE=M244W+;DTYPE=G

Full width $\Gamma(B_1(5721)^0) = 27.5 \pm 3.4$ MeV (S = 1.1)
NODE=M244W0;DTYPE=G

$B_1(5721)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$B^*\pi$	seen	365	NODE=M244215;DESIG=1

$B_2^*(5747)$

$I(J^P) = \frac{1}{2}(2^+)$
I, J, P need confirmation.

NODE=M245

$B_2^*(5747)^+$ mass = 5737.2 ± 0.7 MeV
NODE=M245M+;DTYPE=M

$m_{B_2^{*+}} - m_{B^0} = 457.5 \pm 0.7$ MeV
NODE=M245DM+;DTYPE=D

$B_2^*(5747)^0$ mass = 5739.5 ± 0.7 MeV (S = 1.4)
NODE=M245M0;DTYPE=M

$m_{B_2^{*0}} - m_{B_1^0} = 13.4 \pm 1.4$ MeV (S = 1.3)
NODE=M245DM0;DTYPE=D

$m_{B_2^{*0}} - m_{B^+} = 460.2 \pm 0.6$ MeV (S = 1.4)
NODE=M245DM2;DTYPE=D

Full width $\Gamma(B_2^*(5747)^+) = 20 \pm 5$ MeV (S = 2.2)
NODE=M245W+;DTYPE=G

Full width $\Gamma(B_2^*(5747)^0) = 24.2 \pm 1.7$ MeV
NODE=M245W0;DTYPE=G

$B_2^*(5747)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$B\pi$	seen	420	NODE=M245215;DESIG=1
$B^*\pi$	seen	376	DESIG=2

$B_J(5970)$

$I(J^P) = \frac{1}{2}(?^?)$
I, J, P need confirmation.

NODE=M248

Mass $m = 5964 \pm 5$ MeV
NODE=M248M+;DTYPE=M

$m_{B_J(5970)^+} - m_{B^0} = 685 \pm 5$ MeV
NODE=M248DM+;DTYPE=D

Mass $m = 5971 \pm 5$ MeV
NODE=M248M0;DTYPE=M

$m_{B_J(5970)^0} - m_{B^+} = 691 \pm 5$ MeV
NODE=M248DM0;DTYPE=D

Full width $\Gamma = 62 \pm 20$ MeV
NODE=M248W+;DTYPE=G

Full width $\Gamma = 81 \pm 12$ MeV
NODE=M248W0;DTYPE=G

$B_J(5970)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$B\pi$	possibly seen	633	NODE=M248215;DESIG=1
$B^*\pi$	seen	592	DESIG=2

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

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

NODE=MXXX046

$B_{s1}(5830)^0$

$I(J^P) = 0(1^+)$
I, J, P need confirmation.

NODE=M187

Mass $m = 5828.70 \pm 0.20$ MeV
$m_{B_{s1}^0} - m_{B^{*+}} = 504.00 \pm 0.17$ MeV
Full width $\Gamma = 0.5 \pm 0.4$ MeV

NODE=M187M;DTYPE=M
NODE=M187DM;DTYPE=D
NODE=M187W;DTYPE=G

$B_{s1}(5830)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$B^{*+}K^-$	seen	97	NODE=M187215;DESIG=1

$B_{s2}^*(5840)^0$

$I(J^P) = 0(2^+)$
I, J, P need confirmation.

NODE=M186

Mass $m = 5839.86 \pm 0.12$ MeV
$m_{B_{s2}^{*0}} - m_{B^+} = 560.52 \pm 0.14$ MeV
Full width $\Gamma = 1.49 \pm 0.27$ MeV

NODE=M186M;DTYPE=M
NODE=M186DM2;DTYPE=D
NODE=M186W;DTYPE=G

$B_{s2}^*(5840)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
B^+K^-	**DEFINED AS 1**	252	NODE=M186215;DESIG=1
$B^{*+}K^-$	0.093 ± 0.018	141	DESIG=2
$B^0K_S^0$	0.43 ± 0.11	245	DESIG=4
$B^{*0}K_S^0$	0.04 ± 0.04	–	DESIG=3

BOTTOM, CHARMED MESONS ($B = C = \pm 1$)

$B_c^+ = c\overline{b}$, $B_c^- = \overline{c}\,b$, similarly for B_c^*'s

NODE=MXXX049

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

NODE=MXXX025

$\eta_c(1S)$

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

NODE=M026

Mass $m = 2983.9 \pm 0.4$ MeV (S = 1.2)
Full width $\Gamma = 32.0 \pm 0.7$ MeV

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

$\eta_c(1S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
Decays involving hadronic resonances				NODE=M026215;NODE=M026;CLUMP=A
$\eta'(958)\pi\pi$	(4.1 ±1.7) %		1323	DESIG=24
$\rho\rho$	(1.8 ±0.5) %		1275	DESIG=19
$K^*(892)^0 K^-\pi^+$ + c.c.	(2.0 ±0.7) %		1278	DESIG=26
$K^*(892)\overline{K}^*(892)$	(6.9 ±1.3) $\times 10^{-3}$		1196	DESIG=18
$K^*(892)^0\overline{K}^*(892)^0\pi^+\pi^-$	(1.1 ±0.5) %		1073	DESIG=57
ϕK^+K^-	(2.9 ±1.4) $\times 10^{-3}$		1104	DESIG=28
$\phi\phi$	(1.74±0.19) $\times 10^{-3}$		1089	DESIG=17
$\phi 2(\pi^+\pi^-)$	< 4 $\times 10^{-3}$	90%	1251	DESIG=58
$a_0(980)\pi$	< 2 %	90%	1327	DESIG=21
$a_2(1320)\pi$	< 2 %	90%	1197	DESIG=22
$K^*(892)\overline{K}$ + c.c.	< 1.28 %	90%	1310	DESIG=40
$f_2(1270)\eta$	< 1.1 %	90%	1145	DESIG=23
$\omega\omega$	(2.9 ±0.8) $\times 10^{-3}$		1270	DESIG=20
$\omega\phi$	< 2.5 $\times 10^{-4}$	90%	1185	DESIG=47
$f_2(1270)f_2(1270)$	(9.8 ±2.5) $\times 10^{-3}$		774	DESIG=46
$f_2(1270)f_2'(1525)$	(9.5 ±3.2) $\times 10^{-3}$		524	DESIG=59
$f_0(980)\eta$	seen		1264	DESIG=70
$f_0(1500)\eta$	seen		1025	DESIG=71
$f_0(2200)\eta$	seen		498	DESIG=72
$a_0(980)\pi$	seen		1327	DESIG=73
$a_0(1320)\pi$	seen		–	DESIG=74
$a_0(1450)\pi$	seen		1123	DESIG=75
$a_0(1950)\pi$	seen		860	DESIG=79
$K_0^*(1430)\overline{K}$	seen		–	DESIG=76
$K_2^*(1430)\overline{K}$	seen		–	DESIG=77
$K_0^*(1950)\overline{K}$	seen		–	DESIG=78
Decays into stable hadrons				NODE=M026;CLUMP=B
$K\overline{K}\pi$	(7.3 ±0.4) %		1381	DESIG=14
$K\overline{K}\eta$	(1.36±0.15) %		1265	DESIG=25
$\eta\pi^+\pi^-$	(1.7 ±0.6) %		1428	DESIG=16
$\eta 2(\pi^+\pi^-)$	(4.4 ±1.6) %		1386	DESIG=61
$K^+K^-\pi^+\pi^-$	(6.6 ±1.1) $\times 10^{-3}$		1345	DESIG=15
$K^+K^-\pi^+\pi^-\pi^0$	(3.5 ±0.6) %		1304	DESIG=60
$K^0K^-\pi^+\pi^-\pi^+$+c.c.	(5.6 ±1.9) %		–	DESIG=62
$K^+K^-2(\pi^+\pi^-)$	(7.5 ±2.4) $\times 10^{-3}$		1254	DESIG=55
$2(K^+K^-)$	(1.43±0.30) $\times 10^{-3}$		1056	DESIG=27
$\pi^+\pi^-\pi^0$	< 5 $\times 10^{-4}$	90%	1476	DESIG=81
$\pi^+\pi^-\pi^0\pi^0$	(4.7 ±1.4) %		1460	DESIG=63
$2(\pi^+\pi^-)$	(9.1 ±1.2) $\times 10^{-3}$		1459	DESIG=11
$2(\pi^+\pi^-\pi^0)$	(15.8 ±2.3) %		1409	DESIG=64
$3(\pi^+\pi^-)$	(1.7 ±0.4) %		1407	DESIG=56
$p\overline{p}$	(1.44±0.14) $\times 10^{-3}$		1160	DESIG=12
$p\overline{p}\pi^0$	(3.6 ±1.5) $\times 10^{-3}$		1101	DESIG=65
$\Lambda\overline{\Lambda}$	(1.06±0.23) $\times 10^{-3}$		991	DESIG=45
$K^+\overline{p}\Lambda$ + c.c.	(2.5 ±0.4) $\times 10^{-3}$		772	DESIG=82
$\overline{\Lambda}(1520)\Lambda$ + c.c.	(3.1 ±1.3) $\times 10^{-3}$		694	DESIG=83
$\Sigma^+\overline{\Sigma}^-$	(2.1 ±0.6) $\times 10^{-3}$		901	DESIG=66
$\Xi^-\overline{\Xi}^+$	(9.0 ±2.6) $\times 10^{-4}$		692	DESIG=67
$\pi^+\pi^-p\overline{p}$	(5.3 ±2.1) $\times 10^{-3}$		1027	DESIG=13
Radiative decays				NODE=M026;CLUMP=C
$\gamma\gamma$	(1.61±0.12) $\times 10^{-4}$		1492	DESIG=31

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

NODE=M026;CLUMP=D

$\pi^+\pi^-$	P,CP	$<$ 1.1	$\times 10^{-4}$	90%	1485	DESIG=51
$\pi^0\pi^0$	P,CP	$<$ 4	$\times 10^{-5}$	90%	1486	DESIG=52
K^+K^-	P,CP	$<$ 6	$\times 10^{-4}$	90%	1408	DESIG=53
$K^0_S K^0_S$	P,CP	$<$ 3.1	$\times 10^{-4}$	90%	1407	DESIG=54

$J/\psi(1S)$

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

NODE=M070

Mass $m = 3096.900 \pm 0.006$ MeV

NODE=M070M;DTYPE=M

Full width $\Gamma = 92.6 \pm 1.7$ keV (S = 1.1)

NODE=M070W;DTYPE=G

$J/\psi(1S)$ DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
hadrons		(87.7 ± 0.5) %		–	NODE=M070215;DESIG=3
virtual $\gamma \to$ hadrons		(13.50 ± 0.30) %		–	DESIG=4
ggg		(64.1 ± 1.0) %		–	DESIG=249
γgg		(8.8 ± 1.1) %		–	DESIG=250
e^+e^-		(5.971± 0.032) %		1548	DESIG=1
$e^+e^-\gamma$	[j]	(8.8 ± 1.4) $\times 10^{-3}$		1548	DESIG=5
$\mu^+\mu^-$		(5.961± 0.033) %		1545	DESIG=2
Decays involving hadronic resonances					NODE=M070;CLUMP=A
$\rho\pi$		(1.69 ± 0.15) %	S=2.4	1448	DESIG=20
$\rho^0\pi^0$		(5.6 ± 0.7) $\times 10^{-3}$		1448	DESIG=21
$\rho(770)^\mp K^\pm K^0_S$		(1.9 ± 0.4) $\times 10^{-3}$		–	DESIG=342
$\rho(1450)\pi \to \pi^+\pi^-\pi^0$		(2.3 ± 0.7) $\times 10^{-3}$		–	DESIG=328
$\rho(1450)^\pm\pi^\mp \to K^0_S K^\pm\pi^\mp$		(3.5 ± 0.6) $\times 10^{-4}$		–	DESIG=329
$\rho(1450)^0\pi^0 \to K^+K^-\pi^0$		(2.7 ± 0.6) $\times 10^{-4}$		–	DESIG=312
$\rho(1450)\eta'(958) \to \pi^+\pi^-\eta'(958)$		(3.3 ± 0.7) $\times 10^{-6}$		–	DESIG=345
$\rho(1700)\pi \to \pi^+\pi^-\pi^0$		(1.7 ± 1.1) $\times 10^{-4}$		–	DESIG=313
$\rho(2150)\pi \to \pi^+\pi^-\pi^0$		(8 ±40) $\times 10^{-6}$		–	DESIG=314
$a_2(1320)\rho$		(1.09 ± 0.22) %		1124	DESIG=43
$\omega\pi^+\pi^+\pi^-\pi^-$		(8.5 ± 3.4) $\times 10^{-3}$		1392	DESIG=26
$\omega\pi^+\pi^-\pi^0$		(4.0 ± 0.7) $\times 10^{-3}$		1418	DESIG=211
$\omega\pi^+\pi^-$		(7.2 ± 1.0) $\times 10^{-3}$		1435	DESIG=24
$\omega f_2(1270)$		(4.3 ± 0.6) $\times 10^{-3}$		1142	DESIG=28
$K^*(892)^0\overline{K}^*(892)^0$		(2.3 ± 0.6) $\times 10^{-4}$		1266	DESIG=46
$K^*(892)^\pm K^*(892)^\mp$		(1.00 $^{+\ 0.22}_{-\ 0.40}$) $\times 10^{-3}$		1266	DESIG=256
$K^*(892)^\pm K^*(700)^\mp$		(1.1 $^{+\ 1.0}_{-\ 0.6}$) $\times 10^{-3}$		–	DESIG=257
$K^0_S\pi^- K^*(892)^+$ + c.c.		(2.0 ± 0.5) $\times 10^{-3}$		1342	DESIG=299
$K^0_S\pi^- K^*(892)^+$ + c.c. $\to K^0_S K^0_S\pi^+\pi^-$		(6.7 ± 2.2) $\times 10^{-4}$		–	DESIG=300
$K^0_S K^*(892)^0 \to \gamma K^0_S K^0_S$		(6.3 $^{+\ 0.6}_{-\ 0.5}$) $\times 10^{-6}$		–	DESIG=376
$K^*_2(1430)^+K^-$ + c.c. $\to K^+K^-\pi^0$		(2.69 $^{+\ 0.25}_{-\ 0.19}$) $\times 10^{-4}$		–	DESIG=381
$K^*_2(1980)^+K^-$ + c.c. $\to K^+K^-\pi^0$		(1.10 $^{+\ 0.60}_{-\ 0.14}$) $\times 10^{-5}$		–	DESIG=382
$K^*_4(2045)^+K^-$ + c.c. $\to K^+K^-\pi^0$		(6.2 $^{+\ 2.9}_{-\ 1.6}$) $\times 10^{-6}$		–	DESIG=383
$\eta K^*(892)^0\overline{K}^*(892)^0$		(1.15 ± 0.26) $\times 10^{-3}$		1003	DESIG=252
$\eta' K^{*\pm}K^\mp$		(1.48 ± 0.13) $\times 10^{-3}$		–	DESIG=355
$\eta' K^{*0}\overline{K}^0$ + c.c.		(1.66 ± 0.21) $\times 10^{-3}$		1000	DESIG=357
$\eta' h_1(1415) \to \eta' K^*\overline{K}$ + c.c.		(2.16 ± 0.31) $\times 10^{-4}$		–	DESIG=353
$\eta' h_1(1415) \to \eta' K^{*\pm}K^\mp$		(1.51 ± 0.23) $\times 10^{-4}$		–	DESIG=354
$K^*(1410)\overline{K}$ +c.c $\to K^\pm K^\mp\pi^0$		(7 ± 4) $\times 10^{-5}$		–	DESIG=330

$K^*(1410)\overline{K}$ + c.c. → $K^0_S K^\pm \pi^\mp$	(8 ± 6) × 10^{-5}		–	DESIG=318
$K^*_2(1430)\overline{K}$ +c.c. → $K^\pm K^\mp \pi^0$	(1.0 ± 0.5) × 10^{-4}		–	DESIG=321
$K^*_2(1430)\overline{K}$ + c.c. → $K^0_S K^\pm \pi^\mp$	(4.0 ± 1.0) × 10^{-4}		–	DESIG=320
$K^*(892)^0 \overline{K}^*_2(1430)^0$ + c.c.	(4.67 ± 0.29) × 10^{-3}		1011	DESIG=48
$K^*(892)^+ K^*_2(1430)^-$ + c.c.	(3.4 ± 2.9) × 10^{-3}		1011	DESIG=303
$K^*(892)^+ K^*_2(1430)^-$ + c.c. → $K^*(892)^+ K^0_S \pi^-$ + c.c.	(4 ± 4) × 10^{-4}		–	DESIG=304
$K^*(892)^0 \overline{K}_2(1770)^0$ + c.c. → $K^*(892)^0 K^- \pi^+$ + c.c.	(6.9 ± 0.9) × 10^{-4}		–	DESIG=235
$\omega K^*(892)\overline{K}$ + c.c.	(6.1 ± 0.9) × 10^{-3}		1097	DESIG=102
$\overline{K} K^*(892)$ +c.c. → $K^0_S K^\pm \pi^\mp$	(5.0 ± 0.5) × 10^{-3}		–	DESIG=332
$K^+ K^*(892)^-$ + c.c.	(6.0 $^{+\ 0.8}_{-\ 1.0}$) × 10^{-3}	S=2.9	1373	DESIG=121
$K^+ K^*(892)^-$ + c.c. → $K^+ K^- \pi^0$	(2.69 $^{+\ 0.13}_{-\ 0.20}$) × 10^{-3}		–	DESIG=231
$K^+ K^*(892)^-$ + c.c. → $K^0 K^\pm \pi^\mp$ + c.c.	(3.0 ± 0.4) × 10^{-3}		–	DESIG=232
$K^0 \overline{K}^*(892)^0$ + c.c.	(4.2 ± 0.4) × 10^{-3}		1373	DESIG=122
$K^0 \overline{K}^*(892)^0$ + c.c. → $K^0 K^\pm \pi^\mp$ + c.c.	(3.2 ± 0.4) × 10^{-3}		–	DESIG=233
$K_1(1400)^\pm K^\mp$	(3.8 ± 1.4) × 10^{-3}		1170	DESIG=132
$\overline{K}^*(892)^0 K^+ \pi^-$ + c.c.	(7.7 ± 1.6) × 10^{-3}		1343	DESIG=214
$K^*(892)^\pm K^\mp \pi^0$	(4.1 ± 1.3) × 10^{-3}		1344	DESIG=343
$K^*(892)^0 K^0_S \pi^0$	(7 ± 4) × 10^{-4}		1343	DESIG=344
$\omega \pi^0 \pi^0$	(3.4 ± 0.8) × 10^{-3}		1436	DESIG=140
$\omega \pi^0 \eta$	(3.4 ± 1.7) × 10^{-4}		1363	DESIG=360
$b_1(1235)^\pm \pi^\mp$	[k] (3.0 ± 0.5) × 10^{-3}		1300	DESIG=49
$\omega K^\pm K^0_S \pi^\mp$	[k] (3.4 ± 0.5) × 10^{-3}		1210	DESIG=101
$b_1(1235)^0 \pi^0$	(2.3 ± 0.6) × 10^{-3}		1300	DESIG=160
$\eta K^\pm K^0_S \pi^\mp$	[k] (2.2 ± 0.4) × 10^{-3}		1278	DESIG=230
$\phi K^*(892)\overline{K}$ + c.c.	(2.18 ± 0.23) × 10^{-3}		969	DESIG=104
$\omega K \overline{K}$	(1.9 ± 0.4) × 10^{-3}		1268	DESIG=27
$\omega f_0(1710)$ → $\omega K \overline{K}$	(4.8 ± 1.1) × 10^{-4}		878	DESIG=130
$\phi 2(\pi^+ \pi^-)$	(1.60 ± 0.32) × 10^{-3}		1318	DESIG=35
$\Delta(1232)^{++} \overline{p} \pi^-$	(1.6 ± 0.5) × 10^{-3}		1030	DESIG=70
$\omega \eta$	(1.74 ± 0.20) × 10^{-3}	S=1.6	1394	DESIG=30
$\omega \eta' \pi^+ \pi^-$	(1.12 ± 0.13) × 10^{-3}		1173	DESIG=385
$\phi K \overline{K}$	(1.77 ± 0.16) × 10^{-3}	S=1.3	1179	DESIG=36
$\phi K^0_S K^0_S$	(5.9 ± 1.5) × 10^{-4}		1176	DESIG=305
$\phi f_0(1710)$ → $\phi K \overline{K}$	(3.6 ± 0.6) × 10^{-4}		875	DESIG=129
$\phi K^+ K^-$	(8.3 ± 1.1) × 10^{-4}		1179	DESIG=295
$\phi f_2(1270)$	(3.2 ± 0.6) × 10^{-4}		1036	DESIG=39
$\Delta(1232)^{++} \overline{\Delta}(1232)^{--}$	(1.10 ± 0.29) × 10^{-3}		938	DESIG=66
$\Sigma(1385)^- \overline{\Sigma}(1385)^+$ (or c.c.)	[k] (1.16 ± 0.05) × 10^{-3}		697	DESIG=67
$\Sigma(1385)^0 \overline{\Sigma}(1385)^0$	(1.07 ± 0.08) × 10^{-3}		697	DESIG=309
$K^+ K^- f'_2(1525)$	(1.06 ± 0.35) × 10^{-3}		897	DESIG=308
$\phi f'_2(1525)$	(8 ± 4) × 10^{-4}	S=2.7	877	DESIG=40
$\phi \pi^+ \pi^-$	(9.4 ± 1.5) × 10^{-4}	S=1.7	1365	DESIG=34
$\phi \pi^0 \pi^0$	(5.0 ± 1.0) × 10^{-4}		1366	DESIG=76
$\phi K^\pm K^0_S \pi^\mp$	[k] (7.2 ± 0.8) × 10^{-4}		1114	DESIG=103
$\omega f_1(1420)$	(6.8 ± 2.4) × 10^{-4}		1062	DESIG=105
$\phi \eta$	(7.4 ± 0.8) × 10^{-4}	S=1.5	1320	DESIG=37
$\Xi^0 \overline{\Xi}^0$	(1.17 ± 0.04) × 10^{-3}		818	DESIG=248

$\Xi(1530)^-\overline{\Xi}^+$ + c.c.		$(\ 3.18 \pm 0.08\ )\times10^{-4}$		600	DESIG=107
$pK^-\overline{\Sigma}(1385)^0$		$(\ 5.1 \pm 3.2\ )\times10^{-4}$		646	DESIG=74
$\omega\pi^0$		$(\ 4.5 \pm 0.5\ )\times10^{-4}$	S=1.4	1446	DESIG=32
$\omega\pi^0 \to \pi^+\pi^-\pi^0$		$(\ 1.7 \pm 0.8\ )\times10^{-5}$		–	DESIG=327
$\phi\eta'(958)$		$(\ 4.6 \pm 0.5\ )\times10^{-4}$	S=2.2	1192	DESIG=38
$\phi f_0(980)$		$(\ 3.2 \pm 0.9\ )\times10^{-4}$	S=1.9	1178	DESIG=41
$\phi f_0(980) \to \phi\pi^+\pi^-$		$(\ 2.60 \pm 0.34\ )\times10^{-4}$		–	DESIG=236
$\phi f_0(980) \to \phi\pi^0\pi^0$		$(\ 1.8 \pm 0.5\ )\times10^{-4}$		–	DESIG=237
$\phi\eta\eta'$		$(\ 2.32 \pm 0.17\ )\times10^{-4}$		885	DESIG=387
$\phi\pi^0 f_0(980) \to \phi\pi^0\pi^+\pi^-$		$(\ 4.5 \pm 1.0\ )\times10^{-6}$		–	DESIG=278
$\phi\pi^0 f_0(980) \to \phi\pi^0 p^0\pi^0$		$(\ 1.7 \pm 0.6\ )\times10^{-6}$		1045	DESIG=279
$\eta\phi f_0(980) \to \eta\phi\pi^+\pi^-$		$(\ 3.2 \pm 1.0\ )\times10^{-4}$		–	DESIG=229
$\phi a_0(980)^0 \to \phi\eta\pi^0$		$(\ 4.4 \pm 1.4\ )\times10^{-6}$		–	DESIG=258
$\Xi(1530)^0\overline{\Xi}^0$		$(\ 3.2 \pm 1.4\ )\times10^{-4}$		608	DESIG=108
$\Sigma(1385)^-\overline{\Sigma}^+$ (or c.c.)	[k]	$(\ 3.1 \pm 0.5\ )\times10^{-4}$		855	DESIG=68
$\phi f_1(1285)$		$(\ 2.6 \pm 0.5\ )\times10^{-4}$		1032	DESIG=106
$\phi f_1(1285) \to \phi\pi^0 f_0(980) \to \phi\pi^0\pi^+\pi^-$		$(\ 9.4 \pm 2.8\ )\times10^{-7}$		952	DESIG=280
$\phi f_1(1285) \to \phi\pi^0 f_0(980) \to \phi\pi^0\pi^0\pi^0$		$(\ 2.1 \pm 2.2\ )\times10^{-7}$		955	DESIG=281
$\eta\pi^+\pi^-$		$(\ 3.8 \pm 0.7\ )\times10^{-4}$		1487	DESIG=239
$\eta\rho$		$(\ 1.93 \pm 0.23\ )\times10^{-4}$		1396	DESIG=22
$\omega\eta'(958)$		$(\ 1.89 \pm 0.18\ )\times10^{-4}$		1279	DESIG=31
$\omega f_0(980)$		$(\ 1.4 \pm 0.5\ )\times10^{-4}$		1267	DESIG=150
$\rho\eta'(958)$		$(\ 8.1 \pm 0.8\ )\times10^{-5}$	S=1.6	1281	DESIG=23
$a_2(1320)^\pm\pi^\mp$	[k]	$< 4.3 \times10^{-3}$	CL=90%	1264	DESIG=42
$K\overline{K}_2^*(1430)$ + c.c.		$< 4.0 \times10^{-3}$	CL=90%	1158	DESIG=45
$K_1(1270)^\pm K^\mp$		$< 3.0 \times10^{-3}$	CL=90%	1240	DESIG=131
$K_1(1270)K_S^0 \to \gamma K_S^0 K_S^0$		$(\ 8.5 \pm 2.5\ )\times10^{-7}$		–	DESIG=377
$K_S^0\pi^- K_2^*(1430)^+$ + c.c.		$(\ 3.6 \pm 1.8\ )\times10^{-3}$		1116	DESIG=301
$K_2^*(1430)^0\overline{K}_2^*(1430)^0$		$< 2.9 \times10^{-3}$	CL=90%	601	DESIG=47
$\phi\pi^0$		3×10^{-6} or 1×10^{-7}		1377	DESIG=33;OUR EVAL;→ UNCHECKED ←
$\phi\eta(1405) \to \phi\eta\pi^+\pi^-$		$(\ 2.0 \pm 1.0\ )\times10^{-5}$		946	DESIG=128
$\omega f_2'(1525)$		$< 2.2 \times10^{-4}$	CL=90%	1007	DESIG=29
$\omega X(1835) \to \omega p\overline{p}$		$< 3.9 \times10^{-6}$	CL=95%	–	DESIG=263
$\omega X(1835),\ X \to \eta'\pi^+\pi^-$		$< 6.2 \times10^{-5}$		–	DESIG=386
$\phi X(1835) \to \phi p\overline{p}$		$< 2.1 \times10^{-7}$	CL=90%	–	DESIG=291
$\phi X(1835) \to \phi\eta\pi^+\pi^-$		$< 2.8 \times10^{-4}$	CL=90%	578	DESIG=288
$\phi X(1870) \to \phi\eta\pi^+\pi^-$		$< 6.13 \times10^{-5}$	CL=90%	–	DESIG=289
$\eta\phi(2170) \to \eta\phi f_0(980) \to \eta\phi\pi^+\pi^-$		$(\ 1.2 \pm 0.4\ )\times10^{-4}$		628	DESIG=287
$\eta\phi(2170) \to \eta K^*(892)^0\overline{K}^*(892)^0$		$< 2.52 \times10^{-4}$	CL=90%	–	DESIG=253
$\Sigma(1385)^0\overline{\Lambda}$ + c.c.		$< 8.2 \times10^{-6}$	CL=90%	912	DESIG=111
$\Delta(1232)^+\overline{p}$		$< 1 \times10^{-4}$	CL=90%	1100	DESIG=112
$\Lambda(1520)\overline{\Lambda}$ + c.c. $\to \gamma\Lambda\overline{\Lambda}$		$< 4.1 \times10^{-6}$	CL=90%	–	DESIG=260
$\overline{\Lambda}(1520)\Lambda$ + c.c.		$< 1.80 \times10^{-3}$	CL=90%	807	DESIG=364
$\Theta(1540)\overline{\Theta}(1540) \to K_S^0 pK^-\overline{n}$ + c.c.		$< 1.1 \times10^{-5}$	CL=90%	–	DESIG=205
$\Theta(1540)K^-\overline{n} \to K_S^0 pK^-\overline{n}$		$< 2.1 \times10^{-5}$	CL=90%	–	DESIG=206
$\Theta(1540)K_S^0\overline{p} \to K_S^0\overline{p}K^+n$		$< 1.6 \times10^{-5}$	CL=90%	–	DESIG=207
$\overline{\Theta}(1540)K^+n \to K_S^0\overline{p}K^+n$		$< 5.6 \times10^{-5}$	CL=90%	–	DESIG=208
$\overline{\Theta}(1540)K_S^0 p \to K_S^0 pK^-\overline{n}$		$< 1.1 \times10^{-5}$	CL=90%	–	DESIG=209

Decays into stable hadrons

NODE=M070;CLUMP=B

$2(\pi^+\pi^-)\pi^0$		(3.73 ± 0.32) %	S=1.4	1496	DESIG=9
$3(\pi^+\pi^-)\pi^0$		(2.9 ± 0.6) %		1433	DESIG=11
$\pi^+\pi^-\pi^0$		(2.10 ± 0.08) %	S=1.6	1533	DESIG=7
$\pi^+\pi^-\pi^0\pi^0\pi^0$		(2.71 ± 0.29) %		1497	DESIG=358
$\rho^\pm\pi^\mp\pi^0\pi^0$		(1.41 ± 0.22) %		1421	DESIG=362
$\rho^+\rho^-\pi^0$		(6.0 ± 1.1) $\times 10^{-3}$		1298	DESIG=363
$\pi^+\pi^-\pi^0 K^+K^-$		(1.20 ± 0.30) %		1368	DESIG=18
$4(\pi^+\pi^-)\pi^0$		(9.0 ± 3.0) $\times 10^{-3}$		1345	DESIG=12
$\pi^+\pi^- K^+K^-$		(6.86 ± 0.28) $\times 10^{-3}$		1407	DESIG=16
$\pi^+\pi^- K^0_S K^0_L$		(3.8 ± 0.6) $\times 10^{-3}$		1406	DESIG=296
$\pi^+\pi^- K^0_S K^0_S$		(1.68 ± 0.19) $\times 10^{-3}$		1406	DESIG=297
$\pi^\pm\pi^0 K^\mp K^0_S$		(5.7 ± 0.5) $\times 10^{-3}$		1408	DESIG=341
$K^+K^- K^0_S K^0_S$		(4.2 ± 0.7) $\times 10^{-4}$		1127	DESIG=298
$\pi^+\pi^- K^+K^-\eta$		(4.7 ± 0.7) $\times 10^{-3}$		1221	DESIG=238
$\pi^0\pi^0 K^+K^-$		(2.13 ± 0.22) $\times 10^{-3}$		1410	DESIG=234
$\pi^0\pi^0 K^0_S K^0_L$		(1.9 ± 0.4) $\times 10^{-3}$		1408	DESIG=337
$K\overline{K}\pi$		(6.1 ± 1.0) $\times 10^{-3}$		1442	DESIG=15
$K^+K^-\pi^0$		(2.88 ± 0.12) $\times 10^{-3}$		1442	DESIG=334
$K^0_S K^\pm\pi^\mp$		(5.6 ± 0.5) $\times 10^{-3}$		1440	DESIG=335
$K^0_S K^0_L\pi^0$		(2.06 ± 0.26) $\times 10^{-3}$		1440	DESIG=336
$K^*(892)^0\overline{K}^0$ + c.c. → $K^0_S K^0_L\pi^0$		(1.21 ± 0.18) $\times 10^{-3}$		–	DESIG=339
$K^*_2(1430)^0\overline{K}^0$ + c.c. → $K^0_S K^0_L\pi^0$		(4.3 ± 1.3) $\times 10^{-4}$		–	DESIG=338
$K^0_S K^0_L\eta$		(1.45 ± 0.33) $\times 10^{-3}$		1328	DESIG=340
$2(\pi^+\pi^-)$		(3.57 ± 0.30) $\times 10^{-3}$		1517	DESIG=8
$3(\pi^+\pi^-)$		(4.3 ± 0.4) $\times 10^{-3}$		1466	DESIG=10
$2(\pi^+\pi^-\pi^0)$		(1.61 ± 0.20) %		1468	DESIG=210
$2(\pi^+\pi^-)\eta$		(2.26 ± 0.28) $\times 10^{-3}$		1446	DESIG=201
$3(\pi^+\pi^-)\eta$		(7.2 ± 1.5) $\times 10^{-4}$		1379	DESIG=202
$\pi^+\pi^-\pi^0\pi^0\eta$		(2.3 ± 0.5) $\times 10^{-3}$		1448	DESIG=359
$\rho^\pm\pi^\mp\pi^0\eta$		(1.9 ± 0.8) $\times 10^{-3}$		1326	DESIG=361
$p\overline{p}$		(2.120 ± 0.029) $\times 10^{-3}$		1232	DESIG=50
$p\overline{p}\pi^0$		(1.19 ± 0.08) $\times 10^{-3}$	S=1.1	1176	DESIG=52
$p\overline{p}\pi^+\pi^-$		(6.0 ± 0.5) $\times 10^{-3}$	S=1.3	1107	DESIG=54
$p\overline{p}\pi^+\pi^-\pi^0$	[*l*]	(2.3 ± 0.9) $\times 10^{-3}$	S=1.9	1033	DESIG=55
$p\overline{p}\eta$		(2.00 ± 0.12) $\times 10^{-3}$		948	DESIG=56
$p\overline{p}\rho$		< 3.1 $\times 10^{-4}$	CL=90%	774	DESIG=57
$p\overline{p}\omega$		(9.8 ± 1.0) $\times 10^{-4}$	S=1.3	768	DESIG=58
$p\overline{p}\eta'(958)$		(1.29 ± 0.14) $\times 10^{-4}$	S=2.0	596	DESIG=59
$p\overline{p}a_0(980)$ → $p\overline{p}\pi^0\eta$		(6.8 ± 1.8) $\times 10^{-5}$		–	DESIG=276
$p\overline{p}\phi$		(5.19 ± 0.33) $\times 10^{-5}$		527	DESIG=127
$n\overline{n}$		(2.09 ± 0.16) $\times 10^{-3}$		1231	DESIG=64
$n\overline{n}\pi^+\pi^-$		(4 ± 4) $\times 10^{-3}$		1106	DESIG=65
$\Sigma^+\overline{\Sigma}^-$		(1.50 ± 0.24) $\times 10^{-3}$		992	DESIG=247
$\Sigma^0\overline{\Sigma}^0$		(1.172 ± 0.032) $\times 10^{-3}$	S=1.4	988	DESIG=63
$2(\pi^+\pi^-)K^+K^-$		(3.1 ± 1.3) $\times 10^{-3}$		1320	DESIG=17
$p\overline{n}\pi^-$		(2.12 ± 0.09) $\times 10^{-3}$		1174	DESIG=53
$nN(1440)$		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 ←
$\Xi^-\overline{\Xi}^+$		(9.7 ± 0.8) $\times 10^{-4}$	S=1.4	807	DESIG=62
$\Lambda\overline{\Lambda}$		(1.89 ± 0.09) $\times 10^{-3}$	S=2.8	1074	DESIG=60
$\Lambda\overline{\Sigma}^-\pi^+$ (or c.c.)	[*k*]	(8.3 ± 0.7) $\times 10^{-4}$	S=1.2	950	DESIG=71
$pK^-\overline{\Lambda}$+c.c.		(8.6 ± 1.1) $\times 10^{-4}$		876	DESIG=72
$2(K^+K^-)$		(7.2 ± 0.8) $\times 10^{-4}$		1131	DESIG=19
$pK^-\overline{\Sigma}^0$		(2.9 ± 0.8) $\times 10^{-4}$		819	DESIG=73

K^+K^-	$(\ 2.86 \pm 0.21\ )\times10^{-4}$		1468	DESIG=13
$K^0_S K^0_L$	$(\ 1.95 \pm 0.11\ )\times10^{-4}$	S=2.4	1466	DESIG=75
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$(\ 4.3 \pm 1.0\ )\times10^{-3}$		903	DESIG=261
$\Lambda\overline{\Lambda}\eta$	$(\ 1.62 \pm 0.17\ )\times10^{-4}$		672	DESIG=228
$\Lambda\overline{\Lambda}\pi^0$	$(\ 3.8 \pm 0.4\ )\times10^{-5}$		998	DESIG=109
$\overline{\Lambda}nK^0_S$ + c.c.	$(\ 6.5 \pm 1.1\ )\times10^{-4}$		872	DESIG=225
$\pi^+\pi^-$	$(\ 1.47 \pm 0.14\ )\times10^{-4}$		1542	DESIG=6
$\Lambda\overline{\Sigma}$ + c.c.	$(\ 2.83 \pm 0.23\ )\times10^{-5}$		1034	DESIG=61
$K^0_S K^0_S$	$< 1.4 \times10^{-8}$	CL=95%	1466	DESIG=14

Radiative decays NODE=M070;CLUMP=C

3γ	$(\ 1.16 \pm 0.22\ )\times10^{-5}$		1548	DESIG=81
4γ	$< 9 \times10^{-6}$	CL=90%	1548	DESIG=244
5γ	$< 1.5 \times10^{-5}$	CL=90%	1548	DESIG=245
$\gamma\pi^0\pi^0$	$(\ 1.15 \pm 0.05\ )\times10^{-3}$		1543	DESIG=283
$\gamma\eta\pi^0$	$(\ 2.14 \pm 0.31\ )\times10^{-5}$		1497	DESIG=292
$\gamma a_0(980)^0 \to \gamma\eta\pi^0$	$< 2.5 \times10^{-6}$	CL=95%	–	DESIG=293
$\gamma a_2(1320)^0 \to \gamma\eta\pi^0$	$< 6.6 \times10^{-6}$	CL=95%	–	DESIG=294
$\gamma K^0_S K^0_S$	$(\ 8.1 \pm 0.4\ )\times10^{-4}$		1466	DESIG=378
$\gamma\eta_c(1S)$	$(\ 1.7 \pm 0.4\ )\ \%$	S=1.5	111	DESIG=85
$\gamma\eta_c(1S) \to 3\gamma$	$(\ 3.8\ ^{+\ 1.3}_{-\ 1.0}\ )\times10^{-6}$	S=1.1	–	DESIG=246
$\gamma\eta_c(1S) \to \gamma\eta\eta\eta'$	$(\ 4.9 \pm 0.8\ )\times10^{-5}$		–	DESIG=391
$\gamma\pi^+\pi^-2\pi^0$	$(\ 8.3 \pm 3.1\ )\times10^{-3}$		1518	DESIG=99
$\gamma\eta\pi\pi$	$(\ 6.1 \pm 1.0\ )\times10^{-3}$		1487	DESIG=96
$\gamma\eta_2(1870) \to \gamma\eta\pi^+\pi^-$	$(\ 6.2 \pm 2.4\ )\times10^{-4}$		–	DESIG=142
$\gamma\eta(1405/1475) \to \gamma K\overline{K}\pi$	$(\ 2.8 \pm 0.6\ )\times10^{-3}$	S=1.6	1223	DESIG=89
$\gamma\eta(1405/1475) \to \gamma\gamma\rho^0$	$(\ 7.8 \pm 2.0\ )\times10^{-5}$	S=1.8	1223	DESIG=171
$\gamma\eta(1405/1475) \to \gamma\eta\pi^+\pi^-$	$(\ 3.0 \pm 0.5\ )\times10^{-4}$		–	DESIG=170
$\gamma\eta(1405/1475) \to \gamma\gamma\phi$	$< 8.2 \times10^{-5}$	CL=95%	–	DESIG=212
$\gamma\eta(1405) \to \gamma\gamma\gamma$	$< 2.63 \times10^{-6}$	CL=90%	–	DESIG=348
$\gamma\eta(1475) \to \gamma\gamma\gamma$	$< 1.86 \times10^{-6}$	CL=90%	–	DESIG=349
$\gamma\rho\rho$	$(\ 4.5 \pm 0.8\ )\times10^{-3}$		1340	DESIG=94
$\gamma\rho\omega$	$< 5.4 \times10^{-4}$	CL=90%	1338	DESIG=226
$\gamma\rho\phi$	$< 8.8 \times10^{-5}$	CL=90%	1258	DESIG=227
$\gamma\eta'(958)$	$(\ 5.25 \pm 0.07\ )\times10^{-3}$	S=1.3	1400	DESIG=84
$\gamma 2\pi^+2\pi^-$	$(\ 2.8 \pm 0.5\ )\times10^{-3}$	S=1.9	1517	DESIG=95
$\gamma f_2(1270) f_2(1270)$	$(\ 9.5 \pm 1.7\ )\times10^{-4}$		878	DESIG=203
$\gamma f_2(1270) f_2(1270)$ (non resonant)	$(\ 8.2 \pm 1.9\ )\times10^{-4}$		–	DESIG=204
$\gamma K^+K^-\pi^+\pi^-$	$(\ 2.1 \pm 0.6\ )\times10^{-3}$		1407	DESIG=143
$\gamma f_4(2050)$	$(\ 2.7 \pm 0.7\ )\times10^{-3}$		891	DESIG=100
$\gamma\omega\omega$	$(\ 1.61 \pm 0.33\ )\times10^{-3}$		1336	DESIG=97
$\gamma\eta(1405/1475) \to \gamma\rho^0\rho^0$	$(\ 1.7 \pm 0.4\ )\times10^{-3}$	S=1.3	1223	DESIG=124
$\gamma f_2(1270)$	$(\ 1.64 \pm 0.12\ )\times10^{-3}$	S=1.3	1286	DESIG=86
$\gamma f_2(1270) \to \gamma K^0_S K^0_S$	$(\ 2.58\ ^{+\ 0.60}_{-\ 0.22}\ )\times10^{-5}$		–	DESIG=373
$\gamma f_0(1370) \to \gamma K\overline{K}$	$(\ 4.2 \pm 1.5\ )\times10^{-4}$		–	DESIG=284
$\gamma f_0(1370) \to \gamma K^0_S K^0_S$	$(\ 1.1 \pm 0.4\ )\times10^{-5}$		–	DESIG=368
$\gamma f_0(1500) \to \gamma K^0_S K^0_S$	$(\ 1.59\ ^{+\ 0.24}_{-\ 0.60}\ )\times10^{-5}$		–	DESIG=369
$\gamma f_0(1710) \to \gamma K\overline{K}$	$(\ 9.5\ ^{+\ 1.0}_{-\ 0.5}\ )\times10^{-4}$	S=1.5	1075	DESIG=91
$\gamma f_0(1710) \to \gamma\pi\pi$	$(\ 3.8 \pm 0.5\ )\times10^{-4}$		–	DESIG=135
$\gamma f_0(1710) \to \gamma\omega\omega$	$(\ 3.1 \pm 1.0\ )\times10^{-4}$		–	DESIG=221
$\gamma f_0(1710) \to \gamma\eta\eta$	$(\ 2.4\ ^{+\ 1.2}_{-\ 0.7}\ )\times10^{-4}$		–	DESIG=266
$\gamma\eta$	$(\ 1.108 \pm 0.027\ )\times10^{-3}$		1500	DESIG=83
$\gamma f_1(1420) \to \gamma K\overline{K}\pi$	$(\ 7.9 \pm 1.3\ )\times10^{-4}$		1220	DESIG=175
$\gamma f_1(1285)$	$(\ 6.1 \pm 0.8\ )\times10^{-4}$		1283	DESIG=88

$\gamma f_1(1510) \rightarrow \gamma\eta\pi^+\pi^-$	$(4.5 \pm 1.2) \times 10^{-4}$		–		DESIG=141
$\gamma f_2'(1525)$	$(5.7 \,^{+0.8}_{-0.5}) \times 10^{-4}$	S=1.5	1177		DESIG=87
$\gamma f_2'(1525) \rightarrow \gamma K_S^0 K_S^0$	$(8.0 \,^{+0.7}_{-0.5}) \times 10^{-5}$		–		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
$\gamma f_2(1910) \rightarrow \gamma\omega\omega$	$(2.0 \pm 1.4) \times 10^{-4}$		–		DESIG=223
$\gamma f_0(1750) \rightarrow \gamma K_S^0 K_S^0$	$(1.11 \,^{+0.20}_{-0.33}) \times 10^{-5}$		–		DESIG=370
$\gamma f_0(1710) \rightarrow \gamma\omega\phi$	$(2.5 \pm 0.6) \times 10^{-4}$		–		DESIG=262
$\gamma f_2(1810) \rightarrow \gamma\eta\eta$	$(5.4 \,^{+3.5}_{-2.4}) \times 10^{-5}$		–		DESIG=269
$\gamma f_2(1950) \rightarrow \gamma K^*(892)\overline{K}^*(892)$	$(7.0 \pm 2.2) \times 10^{-4}$		–		DESIG=144
$\gamma K^*(892)\overline{K}^*(892)$	$(4.0 \pm 1.3) \times 10^{-3}$		1266		DESIG=145
$\gamma\phi\phi$	$(4.0 \pm 1.2) \times 10^{-4}$	S=2.1	1166		DESIG=98
$\gamma p\overline{p}$	$(3.8 \pm 1.0) \times 10^{-4}$		1232		DESIG=90
$\gamma\eta(2225)$	$(3.14 \,^{+0.50}_{-0.19}) \times 10^{-4}$		752		DESIG=126
$\gamma\eta(1760) \rightarrow \gamma\rho^0\rho^0$	$(1.3 \pm 0.9) \times 10^{-4}$		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
$\gamma X(1835) \rightarrow \gamma\pi^+\pi^-\eta'$	$(2.7 \,^{+0.6}_{-0.8}) \times 10^{-4}$	S=1.6	1006		DESIG=213
$\gamma X(1835) \rightarrow \gamma p\overline{p}$	$(7.7 \,^{+1.5}_{-0.9}) \times 10^{-5}$		–		DESIG=254
$\gamma X(1835) \rightarrow \gamma K_S^0 K_S^0\eta$	$(3.3 \,^{+2.0}_{-1.3}) \times 10^{-5}$		–		DESIG=282
$\gamma X(1835) \rightarrow \gamma\gamma\gamma$	$< 3.56 \times 10^{-6}$	CL=90%	–		DESIG=350
$\gamma X(2370) \rightarrow \gamma K^+K^-\eta'$	$(1.8 \pm 0.7) \times 10^{-5}$		–		DESIG=388
$\gamma X(2370) \rightarrow \gamma K_S^0 K_S^0\eta'$	$(1.2 \pm 0.5) \times 10^{-5}$		–		DESIG=389
$\gamma X(2370) \rightarrow \gamma\eta\eta\eta'$	$< 9.2 \times 10^{-6}$	CL=90%	–		DESIG=390
$\gamma X(1840) \rightarrow \gamma 3(\pi^+\pi^-)$	$(2.4 \,^{+0.7}_{-0.8}) \times 10^{-5}$		–		DESIG=264
$\gamma(K\overline{K}\pi)\ [J^{PC} = 0^{-+}]$	$(7 \pm 4) \times 10^{-4}$	S=2.1	1442		DESIG=176
$\gamma\pi^0$	$(3.56 \pm 0.17) \times 10^{-5}$		1546		DESIG=82
$\gamma p\overline{p}\pi^+\pi^-$	$< 7.9 \times 10^{-4}$	CL=90%	1107		DESIG=93
$\gamma\Lambda\overline{\Lambda}$	$< 1.3 \times 10^{-4}$	CL=90%	1074		DESIG=200
$\gamma f_0(2100) \rightarrow \gamma\eta\eta$	$(1.13 \,^{+0.60}_{-0.30}) \times 10^{-4}$		–		DESIG=267
$\gamma f_0(2100) \rightarrow \gamma\pi\pi$	$(6.2 \pm 1.0) \times 10^{-4}$		–		DESIG=286
$\gamma f_0(2200) \rightarrow \gamma K\overline{K}$	$(5.9 \pm 1.3) \times 10^{-4}$		–		DESIG=285
$\gamma f_0(2200) \rightarrow \gamma K_S^0 K_S^0$	$(2.72 \,^{+0.19}_{-0.50}) \times 10^{-4}$		–		DESIG=371
$\gamma f_J(2220) \rightarrow \gamma\pi\pi$	$< 3.9 \times 10^{-5}$	CL=90%	–		DESIG=136
$\gamma f_J(2220) \rightarrow \gamma K\overline{K}$	$< 4.1 \times 10^{-5}$	CL=90%	–		DESIG=137
$\gamma f_J(2220) \rightarrow \gamma p\overline{p}$	$(1.5 \pm 0.8) \times 10^{-5}$		–		DESIG=138
$\gamma f_0(2330) \rightarrow \gamma K_S^0 K_S^0$	$(4.9 \pm 0.7) \times 10^{-5}$		–		DESIG=372
$\gamma f_2(2340) \rightarrow \gamma\eta\eta$	$(5.6 \,^{+2.4}_{-2.2}) \times 10^{-5}$		–		DESIG=270
$\gamma f_2(2340) \rightarrow \gamma K_S^0 K_S^0$	$(5.5 \,^{+4.0}_{-1.5}) \times 10^{-5}$		–		DESIG=375
$\gamma f_0(1500) \rightarrow \gamma\pi\pi$	$(1.09 \pm 0.24) \times 10^{-4}$		1183		DESIG=172
$\gamma f_0(1500) \rightarrow \gamma\eta\eta$	$(1.7 \,^{+0.6}_{-1.4}) \times 10^{-5}$		–		DESIG=265
$\gamma A \rightarrow \gamma$ invisible	[n] $< 1.7 \times 10^{-6}$	CL=90%	–		DESIG=251
$\gamma A^0 \rightarrow \gamma\mu^+\mu^-$	[o] $< 5 \times 10^{-6}$	CL=90%	–		DESIG=259

Dalitz decays NODE=M070;CLUMP=G

$\pi^0 e^+ e^-$	$(7.6 \pm 1.4) \times 10^{-7}$		1546	DESIG=271
$\eta e^+ e^-$	$(1.43 \pm 0.07) \times 10^{-5}$		1500	DESIG=272
$\eta'(958) e^+ e^-$	$(6.59 \pm 0.18) \times 10^{-5}$		1400	DESIG=273
$\eta U \rightarrow \eta e^+ e^-$	$< 9.11 \times 10^{-7}$	CL=90%	–	DESIG=352
$\eta'(958) U \rightarrow \eta'(958) e^+ e^-$	$< 2.0 \times 10^{-7}$	CL=90%	–	DESIG=366
$\phi e^+ e^-$	$< 1.2 \times 10^{-7}$	CL=90%	1381	DESIG=384

Weak decays

NODE=M070;CLUMP=E

$D^- e^+ \nu_e$ + c.c.	< 1.2	$\times 10^{-5}$	CL=90%	984	DESIG=218
$\overline{D}^0 e^+ e^-$ + c.c.	< 8.5	$\times 10^{-8}$	CL=90%	987	DESIG=219
$D_s^- e^+ \nu_e$ + c.c.	< 1.3	$\times 10^{-6}$	CL=90%	923	DESIG=220
$D_s^{*-} e^+ \nu_e$ + c.c.	< 1.8	$\times 10^{-6}$	CL=90%	828	DESIG=290
$D^- \pi^+$ + c.c.	< 7.5	$\times 10^{-5}$	CL=90%	977	DESIG=241
$\overline{D}^0 \overline{K}^0$ + c.c.	< 1.7	$\times 10^{-4}$	CL=90%	898	DESIG=242
$\overline{D}^0 \overline{K}^{*0}$ + c.c.	< 2.5	$\times 10^{-6}$	CL=90%	670	DESIG=275
$D_s^- \pi^+$ + c.c.	< 1.3	$\times 10^{-4}$	CL=90%	915	DESIG=243
$D_s^- \rho^+$ + c.c.	< 1.3	$\times 10^{-5}$	CL=90%	663	DESIG=274

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

NODE=M070;CLUMP=D

$\gamma\gamma$	C	< 2.7	$\times 10^{-7}$	CL=90%	1548	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	< 8.3	$\times 10^{-6}$	CL=90%	1039	DESIG=178
$\mu^\pm \tau^\mp$	LF	< 2.0	$\times 10^{-6}$	CL=90%	1035	DESIG=179
$\Lambda_c^+ e^-$ +c.c.		< 6.9	$\times 10^{-8}$	CL=90%	–	DESIG=379

Other decays

NODE=M070;CLUMP=F

invisible	< 7	$\times 10^{-4}$	CL=90%	–	DESIG=240

$\chi_{c0}(1P)$

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

NODE=M056

Mass $m = 3414.71 \pm 0.30$ MeV

NODE=M056M;DTYPE=M

Full width $\Gamma = 10.8 \pm 0.6$ MeV

NODE=M056W;DTYPE=G

$\chi_{c0}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
Hadronic decays				NODE=M056215;NODE=M056;CLUMP=A
$2(\pi^+\pi^-)$	(2.34±0.18) %		1679	DESIG=3
$\rho^0\pi^+\pi^-$	(9.1 ±2.9) × 10^{-3}		1607	DESIG=9
$f_0(980) f_0(980)$	(6.6 ±2.1) × 10^{-4}		1391	DESIG=20
$\pi^+\pi^-\pi^0\pi^0$	(3.3 ±0.4) %		1680	DESIG=61
$\rho^+\pi^-\pi^0$ + c.c.	(2.9 ±0.4) %		1607	DESIG=62
$4\pi^0$	(3.3 ±0.4) × 10^{-3}		1681	DESIG=70
$\pi^+\pi^- K^+ K^-$	(1.81±0.14) %		1580	DESIG=5
$K_0^*(1430)^0 \overline{K}_0^*(1430)^0 \to \pi^+\pi^- K^+ K^-$	(9.8 $^{+4.0}_{-2.8}$) × 10^{-4}		–	DESIG=31
$K_0^*(1430)^0 \overline{K}_2^*(1430)^0$ + c.c. $\to \pi^+\pi^- K^+ K^-$	(8.0 $^{+2.0}_{-2.4}$) × 10^{-4}		–	DESIG=32
$K_1(1270)^+ K^-$ + c.c. $\to \pi^+\pi^- K^+ K^-$	(6.3 ±1.9) × 10^{-3}		–	DESIG=33
$K_1(1400)^+ K^-$ + c.c. $\to \pi^+\pi^- K^+ K^-$	< 2.7 × 10^{-3}	CL=90%	–	DESIG=34
$f_0(980) f_0(980)$	(1.6 $^{+1.0}_{-0.9}$) × 10^{-4}		1391	DESIG=23
$f_0(980) f_0(2200)$	(7.9 $^{+2.0}_{-2.5}$) × 10^{-4}		586	DESIG=24
$f_0(1370) f_0(1370)$	< 2.7 × 10^{-4}	CL=90%	1019	DESIG=25
$f_0(1370) f_0(1500)$	< 1.7 × 10^{-4}	CL=90%	920	DESIG=26
$f_0(1370) f_0(1710)$	(6.7 $^{+3.5}_{-2.3}$) × 10^{-4}		740	DESIG=27
$f_0(1500) f_0(1370)$	< 1.3 × 10^{-4}	CL=90%	920	DESIG=28
$f_0(1500) f_0(1500)$	< 5 × 10^{-5}	CL=90%	804	DESIG=29
$f_0(1500) f_0(1710)$	< 7 × 10^{-5}	CL=90%	581	DESIG=30
$K^+ K^- \pi^+\pi^-\pi^0$	(8.6 ±0.9) × 10^{-3}		1545	DESIG=75
$K_S^0 K^\pm \pi^\mp \pi^+\pi^-$	(4.2 ±0.4) × 10^{-3}		1543	DESIG=87
$K^+ K^- \pi^0\pi^0$	(5.6 ±0.9) × 10^{-3}		1582	DESIG=63
$K^+\pi^-\overline{K}^0\pi^0$ + c.c.	(2.49±0.33) %		1581	DESIG=65
$\rho^+ K^- K^0$ + c.c.	(1.21±0.21) %		1458	DESIG=66

$K^*(892)^- K^+ \pi^0 \to K^+ \pi^- \overline{K}^0 \pi^0$ + c.c.	$(4.6 \pm 1.2) \times 10^{-3}$		–	DESIG=67
$K^0_S K^0_S \pi^+ \pi^-$	$(5.7 \pm 1.1) \times 10^{-3}$		1579	DESIG=41
$K^+ K^- \eta \pi^0$	$(3.0 \pm 0.7) \times 10^{-3}$		1468	DESIG=68
$3(\pi^+ \pi^-)$	(1.20 ± 0.18) %		1633	DESIG=4
$K^+ \overline{K}^*(892)^0 \pi^-$ + c.c.	$(7.5 \pm 1.6) \times 10^{-3}$		1523	DESIG=10
$K^*(892)^0 \overline{K}^*(892)^0$	$(1.7 \pm 0.6) \times 10^{-3}$		1456	DESIG=21
$\pi\pi$	$(8.51 \pm 0.33) \times 10^{-3}$		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
$\eta\eta$	$(3.01 \pm 0.19) \times 10^{-3}$		1617	DESIG=13
$\eta\eta'$	$(9.1 \pm 1.1) \times 10^{-5}$		1521	DESIG=37
$\eta'\eta'$	$(2.17 \pm 0.12) \times 10^{-3}$		1413	DESIG=46
$\omega\omega$	$(9.7 \pm 1.1) \times 10^{-4}$		1517	DESIG=22
$\omega\phi$	$(1.41 \pm 0.13) \times 10^{-4}$		1447	DESIG=76
$\omega K^+ K^-$	$(1.94 \pm 0.21) \times 10^{-3}$		1457	DESIG=88
$K^+ K^-$	$(6.05 \pm 0.31) \times 10^{-3}$		1634	DESIG=2
$K^0_S K^0_S$	$(3.16 \pm 0.17) \times 10^{-3}$		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
$\overline{K}^0 K^+ \pi^-$ + 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
$K^+ K^- K^0_S K^0_S$	$(1.4 \pm 0.5) \times 10^{-3}$		1331	DESIG=42
$K^0_S K^0_S K^0_S K^0_S$	$(5.8 \pm 0.5) \times 10^{-4}$		1327	DESIG=94
$K^+ K^- K^+ K^-$	$(2.82 \pm 0.29) \times 10^{-3}$		1333	DESIG=14
$K^+ K^- \phi$	$(9.7 \pm 2.5) \times 10^{-4}$		1381	DESIG=44
$\overline{K}^0 K^+ \pi^- \phi$ + 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
$\phi \pi^+ \pi^- \pi^0$	$(1.18 \pm 0.15) \times 10^{-3}$		1525	DESIG=89
$\phi\phi$	$(8.0 \pm 0.7) \times 10^{-4}$		1370	DESIG=16
$\phi\phi\eta$	$(8.4 \pm 1.0) \times 10^{-4}$		1100	DESIG=96
$p\overline{p}$	$(2.21 \pm 0.08) \times 10^{-4}$		1426	DESIG=11
$p\overline{p}\pi^0$	$(7.0 \pm 0.7) \times 10^{-4}$	S=1.3	1379	DESIG=48
$p\overline{p}\eta$	$(3.5 \pm 0.4) \times 10^{-4}$		1187	DESIG=52
$p\overline{p}\omega$	$(5.2 \pm 0.6) \times 10^{-4}$		1043	DESIG=69
$p\overline{p}\phi$	$(6.0 \pm 1.4) \times 10^{-5}$		876	DESIG=74
$p\overline{p}\pi^+ \pi^-$	$(2.1 \pm 0.7) \times 10^{-3}$	S=1.4	1320	DESIG=8
$p\overline{p}\pi^0 \pi^0$	$(1.04 \pm 0.28) \times 10^{-3}$		1324	DESIG=64
$p\overline{p}K^+ K^-$ (non-resonant)	$(1.22 \pm 0.26) \times 10^{-4}$		890	DESIG=71
$p\overline{p}K^0_S K^0_S$	$< 8.8 \times 10^{-4}$	CL=90%	884	DESIG=40
$p\overline{n}\pi^-$	$(1.27 \pm 0.11) \times 10^{-3}$		1376	DESIG=43
$\overline{p}n\pi^+$	$(1.37 \pm 0.12) \times 10^{-3}$		1376	DESIG=82
$p\overline{n}\pi^-\pi^0$	$(2.34 \pm 0.21) \times 10^{-3}$		1321	DESIG=83
$\overline{p}n\pi^+\pi^0$	$(2.21 \pm 0.18) \times 10^{-3}$		1321	DESIG=84
$\Lambda\overline{\Lambda}$	$(3.27 \pm 0.24) \times 10^{-4}$		1292	DESIG=19
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$(1.18 \pm 0.13) \times 10^{-3}$		1153	DESIG=38
$\Lambda\overline{\Lambda}\pi^+\pi^-$ (non-resonant)	$< 5 \times 10^{-4}$	CL=90%	1153	DESIG=77
$\Sigma(1385)^+ \overline{\Lambda}\pi^-$ + c.c.	$< 5 \times 10^{-4}$	CL=90%	1083	DESIG=78
$\Sigma(1385)^- \overline{\Lambda}\pi^+$ + c.c.	$< 5 \times 10^{-4}$	CL=90%	1083	DESIG=79
$K^+ \overline{p}\Lambda$ + c.c.	$(1.25 \pm 0.12) \times 10^{-3}$	S=1.3	1132	DESIG=49
$K^*(892)^+ \overline{p}\Lambda$ + c.c.	$(4.8 \pm 0.9) \times 10^{-4}$		845	DESIG=98
$K^+ \overline{p}\Lambda(1520)$ + c.c.	$(2.9 \pm 0.7) \times 10^{-4}$		859	DESIG=72
$\Lambda(1520)\overline{\Lambda}(1520)$	$(3.1 \pm 1.2) \times 10^{-4}$		780	DESIG=73
$\Sigma^0 \overline{\Sigma}^0$	$(4.68 \pm 0.32) \times 10^{-4}$		1222	DESIG=58
$\Sigma^+ \overline{p}K^0_S$ + c.c.	$(3.52 \pm 0.27) \times 10^{-4}$		1089	DESIG=97
$\Sigma^0 \overline{p}K^+$ + c.c.	$(3.03 \pm 0.20) \times 10^{-4}$		1090	DESIG=100
$\Sigma^+ \overline{\Sigma}^-$	$(4.6 \pm 0.8) \times 10^{-4}$	S=2.6	1225	DESIG=59
$\Sigma^- \overline{\Sigma}^+$	$(5.1 \pm 0.5) \times 10^{-4}$		1217	DESIG=99
$\Sigma(1385)^+ \overline{\Sigma}(1385)^-$	$(1.6 \pm 0.6) \times 10^{-4}$		1001	DESIG=80
$\Sigma(1385)^- \overline{\Sigma}(1385)^+$	$(2.3 \pm 0.7) \times 10^{-4}$		1001	DESIG=81
$K^- \Lambda \overline{\Xi}^+$ + c.c.	$(1.94 \pm 0.35) \times 10^{-4}$		873	DESIG=85
$\Xi^0 \overline{\Xi}^0$	$(3.1 \pm 0.8) \times 10^{-4}$		1089	DESIG=60
$\Xi^- \overline{\Xi}^+$	$(4.8 \pm 0.7) \times 10^{-4}$		1081	DESIG=39
$\eta_c \pi^+ \pi^-$	$< 7 \times 10^{-4}$	CL=90%	307	DESIG=90

Radiative decays

$\gamma J/\psi(1S)$	(1.40 ± 0.05) %			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
$\gamma\gamma$	(2.04 ± 0.09)	$\times 10^{-4}$		1707	DESIG=7
$e^+e^- J/\psi(1S)$	(1.33 ± 0.29)	$\times 10^{-4}$		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

Mass $m = 3510.67 \pm 0.05$ MeV (S = 1.2)
NODE=M055M;DTYPE=M

Full width $\Gamma = 0.84 \pm 0.04$ MeV
NODE=M055W;DTYPE=G

$\chi_{c1}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
Hadronic decays				NODE=M055215;NODE=M055;CLUMP=A
$3(\pi^+\pi^-)$	$(5.8 \pm1.4) \times 10^{-3}$	S=1.2	1683	DESIG=6
$2(\pi^+\pi^-)$	$(7.6 \pm2.6) \times 10^{-3}$		1728	DESIG=5
$\pi^+\pi^-\pi^0\pi^0$	(1.19 ± 0.15) %		1729	DESIG=51
$\rho^+\pi^-\pi^0$ + c.c.	(1.45 ± 0.24) %		1658	DESIG=52
$\rho^0\pi^+\pi^-$	$(3.9 \pm3.5) \times 10^{-3}$		1657	DESIG=9
$4\pi^0$	$(5.4 \pm0.8) \times 10^{-4}$		1729	DESIG=60
$\pi^+\pi^- K^+K^-$	$(4.5 \pm1.0) \times 10^{-3}$		1632	DESIG=7
$K^+K^-\pi^0\pi^0$	$(1.12\pm0.27) \times 10^{-3}$		1634	DESIG=53
$K^+K^-\pi^+\pi^-\pi^0$	(1.15 ± 0.13) %		1598	DESIG=79
$K^0_S K^\pm\pi^\mp\pi^+\pi^-$	$(7.5 \pm0.8) \times 10^{-3}$		1596	DESIG=84
$K^+\pi^-\overline{K}^0\pi^0$ + c.c.	$(8.6 \pm1.4) \times 10^{-3}$		1632	DESIG=55
$\rho^- K^+\overline{K}^0$ + c.c.	$(5.0 \pm1.2) \times 10^{-3}$		1514	DESIG=56
$K^*(892)^0\overline{K}^0\pi^0 \to K^+\pi^-\overline{K}^0\pi^0$ + c.c.	$(2.3 \pm0.6) \times 10^{-3}$		–	DESIG=57
$K^+K^-\eta\pi^0$	$(1.12\pm0.34) \times 10^{-3}$		1523	DESIG=58
$\pi^+\pi^- K^0_S K^0_S$	$(6.9 \pm2.9) \times 10^{-4}$		1630	DESIG=28
$K^+K^-\eta$	$(3.2 \pm1.0) \times 10^{-4}$		1566	DESIG=42
$\overline{K}^0 K^+\pi^-$ + c.c.	$(7.0 \pm0.6) \times 10^{-3}$		1661	DESIG=17
$K^*(892)^0\overline{K}^0$ + c.c.	$(10 \pm4) \times 10^{-4}$		1602	DESIG=32
$K^*(892)^+K^-$ + c.c.	$(1.4 \pm0.6) \times 10^{-3}$		1602	DESIG=33
$K^*_J(1430)^0\overline{K}^0$ + c.c. $\to K^0_S K^+\pi^-$ + c.c.	< 8 $\times 10^{-4}$	CL=90%	–	DESIG=34
$K^*_J(1430)^+K^-$ + c.c. $\to K^0_S K^+\pi^-$ + c.c.	< 2.1 $\times 10^{-3}$	CL=90%	–	DESIG=35
$K^+K^-\pi^0$	$(1.81\pm0.24) \times 10^{-3}$		1662	DESIG=38
$\eta\pi^+\pi^-$	$(4.62\pm0.23) \times 10^{-3}$		1701	DESIG=31
$a_0(980)^+\pi^-$ + c.c. $\to \eta\pi^+\pi^-$	$(3.2 \pm0.4) \times 10^{-3}$	S=2.2	–	DESIG=36
$a_2(1320)^+\pi^-$ + c.c. $\to \eta\pi^+\pi^-$	$(1.76\pm0.24) \times 10^{-4}$		–	DESIG=93
$a_2(1700)^+\pi^-$ + c.c. $\to \eta\pi^+\pi^-$	$(4.6 \pm0.7) \times 10^{-5}$		–	DESIG=96
$f_2(1270)\eta \to \eta\pi^+\pi^-$	$(3.5 \pm0.6) \times 10^{-4}$		–	DESIG=94
$f_4(2050)\eta \to \eta\pi^+\pi^-$	$(2.5 \pm0.9) \times 10^{-5}$		–	DESIG=95
$\pi_1(1400)^+\pi^-$ + c.c. $\to \eta\pi^+\pi^-$	< 5 $\times 10^{-5}$	CL=90%	–	DESIG=97
$\pi_1(1600)^+\pi^-$ + c.c. $\to \eta\pi^+\pi^-$	< 1.5 $\times 10^{-5}$	CL=90%	–	DESIG=98
$\pi_1(2015)^+\pi^-$ + c.c. $\to \eta\pi^+\pi^-$	< 8 $\times 10^{-6}$	CL=90%	–	DESIG=99
$f_2(1270)\eta$	$(6.7 \pm1.1) \times 10^{-4}$		1467	DESIG=37
$\pi^+\pi^-\eta'$	$(2.2 \pm0.4) \times 10^{-3}$		1612	DESIG=44
$K^+K^-\eta'(958)$	$(8.8 \pm0.9) \times 10^{-4}$		1461	DESIG=85
$K^*_0(1430)^+K^-$ + 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 $^{+7}_{-5}$) $\times 10^{-5}$		1118	DESIG=88
$f_2'(1525)\eta'(958)$	(9 ± 6) $\times 10^{-5}$		1229	DESIG=89
$\pi^0 f_0(980) \rightarrow \pi^0\pi^+\pi^-$	(3.5 ± 0.9) $\times 10^{-7}$		–	DESIG=61
$K^+\overline{K}^*(892)^0\pi^-$ + c.c.	(3.2 ± 2.1) $\times 10^{-3}$		1577	DESIG=10
$K^*(892)^0\overline{K}^*(892)^0$	(1.4 ± 0.4) $\times 10^{-3}$		1512	DESIG=21
$K^+K^-K^0_SK^0_S$	< 4 $\times 10^{-4}$	CL=90%	1390	DESIG=29
$K^0_SK^0_SK^0_SK^0_S$	(3.5 ± 1.0) $\times 10^{-5}$		1387	DESIG=102
$K^+K^-K^+K^-$	(5.4 ± 1.1) $\times 10^{-4}$		1393	DESIG=14
$K^+K^-\phi$	(4.1 ± 1.5) $\times 10^{-4}$		1440	DESIG=30
$\overline{K}^0K^+\pi^-\phi$ + c.c.	(3.3 ± 0.5) $\times 10^{-3}$		1387	DESIG=90
$K^+K^-\pi^0\phi$	(1.62$\pm$0.30) $\times 10^{-3}$		1390	DESIG=91
$\phi\pi^+\pi^-\pi^0$	(7.5 ± 1.0) $\times 10^{-4}$		1578	DESIG=82
$\omega\omega$	(5.7 ± 0.7) $\times 10^{-4}$		1571	DESIG=66
ωK^+K^-	(7.8 ± 0.9) $\times 10^{-4}$		1513	DESIG=81
$\omega\phi$	(2.7 ± 0.4) $\times 10^{-5}$		1503	DESIG=67
$\phi\phi$	(4.2 ± 0.5) $\times 10^{-4}$		1429	DESIG=68
$\phi\phi\eta$	(3.0 ± 0.5) $\times 10^{-4}$		1172	DESIG=104
$p\overline{p}$	(7.60$\pm$0.34) $\times 10^{-5}$		1484	DESIG=11
$p\overline{p}\pi^0$	(1.55$\pm$0.18) $\times 10^{-4}$		1438	DESIG=39
$p\overline{p}\eta$	(1.45$\pm$0.25) $\times 10^{-4}$		1254	DESIG=43
$p\overline{p}\omega$	(2.12$\pm$0.31) $\times 10^{-4}$		1117	DESIG=59
$p\overline{p}\phi$	< 1.7 $\times 10^{-5}$	CL=90%	962	DESIG=65
$p\overline{p}\pi^+\pi^-$	(5.0 ± 1.9) $\times 10^{-4}$		1381	DESIG=8
$p\overline{p}\pi^0\pi^0$	< 5 $\times 10^{-4}$	CL=90%	1385	DESIG=54
$p\overline{p}K^+K^-$ (non-resonant)	(1.27$\pm$0.22) $\times 10^{-4}$		974	DESIG=62
$p\overline{p}K^0_SK^0_S$	< 4.5 $\times 10^{-4}$	CL=90%	968	DESIG=25
$p\overline{n}\pi^-$	(3.8 ± 0.5) $\times 10^{-4}$		1435	DESIG=74
$\overline{p}n\pi^+$	(3.9 ± 0.5) $\times 10^{-4}$		1435	DESIG=75
$p\overline{n}\pi^-\pi^0$	(1.03$\pm$0.12) $\times 10^{-3}$		1383	DESIG=76
$\overline{p}n\pi^+\pi^0$	(1.01$\pm$0.12) $\times 10^{-3}$		1383	DESIG=77
$\Lambda\overline{\Lambda}$	(1.14$\pm$0.11) $\times 10^{-4}$		1355	DESIG=19
$\Lambda\overline{\Lambda}\pi^+\pi^-$	(2.9 ± 0.5) $\times 10^{-4}$		1223	DESIG=24
$\Lambda\overline{\Lambda}\pi^+\pi^-$ (non-resonant)	(2.5 ± 0.6) $\times 10^{-4}$		1223	DESIG=69
$\Sigma(1385)^+\overline{\Lambda}\pi^-$ + c.c.	< 1.3 $\times 10^{-4}$	CL=90%	1157	DESIG=70
$\Sigma(1385)^-\overline{\Lambda}\pi^+$ + c.c.	< 1.3 $\times 10^{-4}$	CL=90%	1157	DESIG=71
$K^+\overline{p}\Lambda$+c.c.	(4.2 ± 0.4) $\times 10^{-4}$	S=1.2	1203	DESIG=40
$K^*(892)^+\overline{p}\Lambda$ + c.c.	(4.9 ± 0.7) $\times 10^{-4}$		935	DESIG=106
$K^+\overline{p}\Lambda(1520)$ + c.c.	(1.7 ± 0.4) $\times 10^{-4}$		951	DESIG=63
$\Lambda(1520)\overline{\Lambda}(1520)$	< 9 $\times 10^{-5}$	CL=90%	880	DESIG=64
$\Sigma^0\overline{\Sigma}^0$	(4.2 ± 0.6) $\times 10^{-5}$		1288	DESIG=48
$\Sigma^+\overline{p}K^0_S$ + c.c.	(1.53$\pm$0.12) $\times 10^{-4}$		1163	DESIG=105
$\Sigma^0\overline{p}K^+$ + c.c.	(1.46$\pm$0.10) $\times 10^{-4}$		1163	DESIG=108
$\Sigma^+\overline{\Sigma}^-$	(3.6 ± 0.7) $\times 10^{-5}$		1291	DESIG=49
$\Sigma^-\overline{\Sigma}^+$	(5.7 ± 1.5) $\times 10^{-5}$		1283	DESIG=107
$\Sigma(1385)^+\overline{\Sigma}(1385)^-$	< 9 $\times 10^{-5}$	CL=90%	1081	DESIG=72
$\Sigma(1385)^-\overline{\Sigma}(1385)^+$	< 5 $\times 10^{-5}$	CL=90%	1081	DESIG=73
$K^-\Lambda\overline{\Xi}^+$ + c.c.	(1.35$\pm$0.24) $\times 10^{-4}$		963	DESIG=92
$\Xi^0\overline{\Xi}^0$	< 6 $\times 10^{-5}$	CL=90%	1163	DESIG=50
$\Xi^-\overline{\Xi}^+$	(8.0 ± 2.1) $\times 10^{-5}$		1155	DESIG=26
$\pi^+\pi^- + K^+K^-$	< 2.1 $\times 10^{-3}$		–	DESIG=23
$K^0_SK^0_S$	< 6 $\times 10^{-5}$	CL=90%	1683	DESIG=27
$\eta_c\pi^+\pi^-$	< 3.2 $\times 10^{-3}$	CL=90%	413	DESIG=83

Radiative decays NODE=M055;CLUMP=B

$\gamma J/\psi(1S)$	(34.3 ±1.0) %		389	DESIG=1
$\gamma\rho^0$	(2.16±0.17) × 10^{-4}		1670	DESIG=45
$\gamma\omega$	(6.8 ±0.8) × 10^{-5}		1668	DESIG=46
$\gamma\phi$	(2.4 ±0.5) × 10^{-5}		1607	DESIG=47
$\gamma\gamma$	< 6.3 × 10^{-6}	CL=90%	1755	DESIG=4
$e^+e^- J/\psi(1S)$	(3.46±0.22) × 10^{-3}		389	DESIG=100
$\mu^+\mu^- J/\psi(1S)$	(2.33±0.29) × 10^{-4}		335	DESIG=103

$h_c(1P)$

$I^G(J^{PC}) = 0^-(1^{+-})$ NODE=M144

Mass m = 3525.38 ± 0.11 MeV NODE=M144M;DTYPE=M

Full width Γ = 0.7 ± 0.4 MeV NODE=M144W;DTYPE=G

$h_c(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$J/\psi(1S)\pi\pi$	not seen		312	NODE=M144215;DESIG=2;OUR EST; → UNCHECKED ←
$J/\psi(1S)\pi^+\pi^-$	< 2.3 × 10^{-3}	90%	305	DESIG=10
$p\overline{p}$	< 1.5 × 10^{-4}	90%	1492	DESIG=3
$p\overline{p}\pi^+\pi^-$	(2.9±0.6) × 10^{-3}		1390	DESIG=11
$p\overline{p}\pi^0\pi^0$	< 5 × 10^{-4}	90%	1394	DESIG=13
$\pi^+\pi^-\pi^0$	(1.6±0.5) × 10^{-3}		1749	DESIG=5
$\pi^+\pi^-\pi^0\eta$	(7.2±2.3) × 10^{-3}		1695	DESIG=14
$2\pi^+2\pi^-\pi^0$	(8.1±1.8) × 10^{-3}		1716	DESIG=6
$3\pi^+3\pi^-\pi^0$	< 9 × 10^{-3}	90%	1661	DESIG=7
$K^+K^-\pi^+\pi^-$	< 6 × 10^{-4}	90%	1640	DESIG=12
$K^+K^-\pi^+\pi^-\pi^0$	(3.2±0.8) × 10^{-3}		1606	DESIG=15
$K^+K^-\pi^+\pi^-\eta$	< 2.3 × 10^{-3}	90%	1480	DESIG=16
$K^+K^-\pi^0$	< 6 × 10^{-4}	90%	1670	DESIG=17
$K^+K^-\pi^0\eta$	< 2.1 × 10^{-3}	90%	1532	DESIG=18
$K^+K^-\eta$	< 9 × 10^{-4}	90%	1574	DESIG=19
$2K^+2K^-\pi^0$	< 2.4 × 10^{-4}	90%	1339	DESIG=20
$K^0_S K^\pm\pi^\mp$	< 6 × 10^{-4}	90%	1668	DESIG=21
$K^0_S K^\pm\pi^\mp\pi^+\pi^-$	(2.8±1.0) × 10^{-3}		1604	DESIG=22

Radiative decays NODE=M144;CLUMP=R

$\gamma\eta$	(4.7±2.1) × 10^{-4}		1720	DESIG=9
$\gamma\eta'(958)$	(1.5±0.4) × 10^{-3}		1633	DESIG=8
$\gamma\eta_c(1S)$	(50 ±9) %		500	DESIG=4

$\chi_{c2}(1P)$

$I^G(J^{PC}) = 0^+(2^{++})$ NODE=M057

Mass m = 3556.17 ± 0.07 MeV NODE=M057M;DTYPE=M

Full width Γ = 1.97 ± 0.09 MeV NODE=M057W;DTYPE=G

$\chi_{c2}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
Hadronic decays				NODE=M057215;NODE=M057;CLUMP=A
$2(\pi^+\pi^-)$	(1.02±0.09) %		1751	DESIG=3
$\pi^+\pi^-\pi^0\pi^0$	(1.83±0.23) %		1752	DESIG=50
$\rho^+\pi^-\pi^0$ + c.c.	(2.19±0.34) %		1682	DESIG=51
$4\pi^0$	(1.11±0.15) × 10^{-3}		1752	DESIG=62
$K^+K^-\pi^0\pi^0$	(2.1 ±0.4) × 10^{-3}		1658	DESIG=52
$K^+\pi^-\overline{K}^0\pi^0$ + c.c.	(1.38±0.20) %		1657	DESIG=54
$\rho^-K^+\overline{K}^0$ + c.c.	(4.1 ±1.2) × 10^{-3}		1540	DESIG=55
$K^*(892)^0K^-\pi^+ \rightarrow K^-\pi^+K^0\pi^0$ + c.c.	(2.9 ±0.8) × 10^{-3}		–	DESIG=60
$K^*(892)^0\overline{K}^0\pi^0 \rightarrow K^+\pi^-\overline{K}^0\pi^0$ + c.c.	(3.8 ±0.9) × 10^{-3}		–	DESIG=56
$K^*(892)^-K^+\pi^0 \rightarrow K^+\pi^-\overline{K}^0\pi^0$ + c.c.	(3.7 ±0.8) × 10^{-3}		–	DESIG=57
$K^*(892)^+\overline{K}^0\pi^- \rightarrow K^+\pi^-\overline{K}^0\pi^0$ + c.c.	(2.9 ±0.8) × 10^{-3}		–	DESIG=58
$K^+K^-\eta\pi^0$	(1.3 ±0.4) × 10^{-3}		1549	DESIG=59
$K^+K^-\pi^+\pi^-$	(8.4 ±0.9) × 10^{-3}		1656	DESIG=5
$K^+K^-\pi^+\pi^-\pi^0$	(1.17±0.13) %		1623	DESIG=67
$K^0_SK^\pm\pi^\mp\pi^+\pi^-$	(7.3 ±0.8) × 10^{-3}		1621	DESIG=78
$K^+\overline{K}^*(892)^0\pi^-$ + c.c.	(2.1 ±1.1) × 10^{-3}		1602	DESIG=10
$K^*(892)^0\overline{K}^*(892)^0$	(2.3 ±0.4) × 10^{-3}		1538	DESIG=21
$3(\pi^+\pi^-)$	(8.6 ±1.8) × 10^{-3}		1707	DESIG=4
$\phi\phi$	(1.06±0.09) × 10^{-3}		1457	DESIG=16
$\phi\phi\eta$	(5.3 ±0.6) × 10^{-4}		1206	DESIG=99
$\omega\omega$	(8.4 ±1.0) × 10^{-4}		1597	DESIG=25
ωK^+K^-	(7.3 ±0.9) × 10^{-4}		1540	DESIG=79
$\omega\phi$	(9.6 ±2.7) × 10^{-6}		1529	DESIG=68
$\pi\pi$	(2.23±0.09) × 10^{-3}		1773	DESIG=22
$\rho^0\pi^+\pi^-$	(3.7 ±1.6) × 10^{-3}		1682	DESIG=9
$\pi^+\pi^-\pi^0$ (non-resonant)	(2.0 ±0.4) × 10^{-5}		1765	DESIG=95
$\rho(770)^\pm\pi^\mp$	(6 ±4) × 10^{-6}		–	DESIG=96
$\pi^+\pi^-\eta$	(4.8 ±1.3) × 10^{-4}		1724	DESIG=39
$\pi^+\pi^-\eta'$	(5.0 ±1.8) × 10^{-4}		1636	DESIG=42
$\eta\eta$	(5.4 ±0.4) × 10^{-4}		1692	DESIG=14
K^+K^-	(1.01±0.06) × 10^{-3}		1708	DESIG=2
$K^0_SK^0_S$	(5.2 ±0.4) × 10^{-4}		1707	DESIG=15
$K^*(892)^\pm K^\mp$	(1.44±0.21) × 10^{-4}		1627	DESIG=87
$K^*(892)^0\overline{K}^0$ + c.c.	(1.24±0.27) × 10^{-4}		1627	DESIG=88
$K^*_2(1430)^\pm K^\mp$	(1.48±0.12) × 10^{-3}		–	DESIG=89
$K^*_2(1430)^0\overline{K}^0$ + c.c.	(1.24±0.17) × 10^{-3}		1443	DESIG=90
$K^*_3(1780)^\pm K^\mp$	(5.2 ±0.8) × 10^{-4}		–	DESIG=91
$K^*_3(1780)^0\overline{K}^0$ + c.c.	(5.6 ±2.1) × 10^{-4}		1274	DESIG=92
$a_2(1320)^0\pi^0$	(1.29±0.34) × 10^{-3}		–	DESIG=93
$a_2(1320)^\pm\pi^\mp$	(1.8 ±0.6) × 10^{-3}		1531	DESIG=94
$\overline{K}^0K^+\pi^-$ + c.c.	(1.28±0.18) × 10^{-3}		1685	DESIG=17
$K^+K^-\pi^0$	(3.0 ±0.8) × 10^{-4}		1686	DESIG=36
$K^+K^-\eta$	< 3.2 × 10^{-4}	90%	1592	DESIG=40
$K^+K^-\eta'(958)$	(1.94±0.34) × 10^{-4}		1488	DESIG=82
$\eta\eta'$	(2.2 ±0.5) × 10^{-5}		1600	DESIG=34
$\eta'\eta'$	(4.6 ±0.6) × 10^{-5}		1498	DESIG=35
$\pi^+\pi^-K^0_SK^0_S$	(2.2 ±0.5) × 10^{-3}		1655	DESIG=29
$K^+K^-K^0_SK^0_S$	< 4 × 10^{-4}	90%	1418	DESIG=30
$K^0_SK^0_SK^0_SK^0_S$	(1.13±0.18) × 10^{-4}		1415	DESIG=97
$K^+K^-K^+K^-$	(1.65±0.20) × 10^{-3}		1421	DESIG=24
$K^+K^-\phi$	(1.42±0.29) × 10^{-3}		1468	DESIG=32

$\overline{K}^0 K^+ \pi^- \phi$ + c.c.	(4.8 ±0.7) × 10^{-3}			1416	DESIG=83
$K^+ K^- \pi^0 \phi$	(2.7 ±0.5) × 10^{-3}			1419	DESIG=84
$\phi \pi^+ \pi^- \pi^0$	(9.3 ±1.2) × 10^{-4}			1603	DESIG=80
$p \overline{p}$	(7.33±0.33) × 10^{-5}			1510	DESIG=11
$p \overline{p} \pi^0$	(4.7 ±0.4) × 10^{-4}			1465	DESIG=37
$p \overline{p} \eta$	(1.74±0.25) × 10^{-4}			1285	DESIG=41
$p \overline{p} \omega$	(3.6 ±0.4) × 10^{-4}			1152	DESIG=61
$p \overline{p} \phi$	(2.8 ±0.9) × 10^{-5}			1002	DESIG=66
$p \overline{p} \pi^+ \pi^-$	(1.32±0.34) × 10^{-3}			1410	DESIG=8
$p \overline{p} \pi^0 \pi^0$	(7.8 ±2.3) × 10^{-4}			1414	DESIG=53
$p \overline{p} K^+ K^-$ (non-resonant)	(1.91±0.32) × 10^{-4}			1013	DESIG=63
$p \overline{p} K^0_S K^0_S$	< 7.9	× 10^{-4}	90%	1007	DESIG=28
$p \overline{n} \pi^-$	(8.5 ±0.9) × 10^{-4}			1463	DESIG=31
$\overline{p} n \pi^+$	(8.9 ±0.8) × 10^{-4}			1463	DESIG=75
$p \overline{n} \pi^- \pi^0$	(2.17±0.18) × 10^{-3}			1411	DESIG=76
$\overline{p} n \pi^+ \pi^0$	(2.11±0.18) × 10^{-3}			1411	DESIG=77
$\Lambda \overline{\Lambda}$	(1.84±0.15) × 10^{-4}			1384	DESIG=19
$\Lambda \overline{\Lambda} \pi^+ \pi^-$	(1.25±0.15) × 10^{-3}			1255	DESIG=27
$\Lambda \overline{\Lambda} \pi^+ \pi^-$ (non-resonant)	(6.6 ±1.5) × 10^{-4}			1255	DESIG=70
$\Sigma(1385)^+ \overline{\Lambda} \pi^-$ + c.c.	< 4	× 10^{-4}	90%	1192	DESIG=71
$\Sigma(1385)^- \overline{\Lambda} \pi^+$ + c.c.	< 6	× 10^{-4}	90%	1192	DESIG=72
$K^+ \overline{p} \Lambda$ + c.c.	(7.8 ±0.5) × 10^{-4}			1236	DESIG=38
$K^*(892)^+ \overline{p} \Lambda$ + c.c.	(8.2 ±1.1) × 10^{-4}			976	DESIG=101
$K^+ \overline{p} \Lambda(1520)$ + c.c.	(2.8 ±0.7) × 10^{-4}			992	DESIG=64
$\Lambda(1520) \overline{\Lambda}(1520)$	(4.6 ±1.5) × 10^{-4}			924	DESIG=65
$\Sigma^0 \overline{\Sigma}^0$	(3.7 ±0.6) × 10^{-5}			1319	DESIG=47
$\Sigma^+ \overline{p} K^0_S$ + c.c.	(8.2 ±0.9) × 10^{-5}			1197	DESIG=100
$\Sigma^0 \overline{p} K^+$ + c.c.	(9.1 ±0.8) × 10^{-5}			1197	DESIG=103
$\Sigma^+ \overline{\Sigma}^-$	(3.4 ±0.7) × 10^{-5}			1322	DESIG=48
$\Sigma^- \overline{\Sigma}^+$	(4.4 ±1.8) × 10^{-5}			1314	DESIG=102
$\Sigma(1385)^+ \overline{\Sigma}(1385)^-$	< 1.6	× 10^{-4}	90%	1118	DESIG=73
$\Sigma(1385)^- \overline{\Sigma}(1385)^+$	< 8	× 10^{-5}	90%	1118	DESIG=74
$K^- \Lambda \overline{\Xi}^+$ + c.c.	(1.76±0.32) × 10^{-4}			1004	DESIG=85
$\Xi^0 \overline{\Xi}^0$	< 1.0	× 10^{-4}	90%	1197	DESIG=49
$\Xi^- \overline{\Xi}^+$	(1.42±0.32) × 10^{-4}			1189	DESIG=26
$J/\psi(1S) \pi^+ \pi^- \pi^0$	< 1.5	%	90%	185	DESIG=12
$\pi^0 \eta_c$	< 3.2	× 10^{-3}	90%	511	DESIG=81
$\eta_c(1S) \pi^+ \pi^-$	< 5.4	× 10^{-3}	90%	459	DESIG=69
Radiative decays					NODE=M057;CLUMP=B
$\gamma J/\psi(1S)$	(19.0 ±0.5) %			430	DESIG=6
$\gamma \rho^0$	< 1.9	× 10^{-5}	90%	1694	DESIG=44
$\gamma \omega$	< 6	× 10^{-6}	90%	1692	DESIG=45
$\gamma \phi$	< 7	× 10^{-6}	90%	1632	DESIG=46
$\gamma \gamma$	(2.85±0.10) × 10^{-4}			1778	DESIG=7
$e^+ e^- J/\psi(1S)$	(2.15±0.14) × 10^{-3}			430	DESIG=86
$\mu^+ \mu^- J/\psi(1S)$	(2.02±0.33) × 10^{-4}			381	DESIG=98

$\eta_c(2S)$

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

NODE=M059

Quantum numbers are quark model predictions.

Mass $m = 3637.5 \pm 1.1$ MeV (S = 1.2)

NODE=M059M;DTYPE=M

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

NODE=M059W;DTYPE=G

$\eta_c(2S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
hadrons	not seen		–	NODE=M059215;DESIG=1
$K\overline{K}\pi$	(1.9±1.2) %		1729	DESIG=4
$K\overline{K}\eta$	(5 ±4) × 10^{-3}		1637	DESIG=20
$2\pi^+2\pi^-$	not seen		1792	DESIG=5
$\rho^0\rho^0$	not seen		1645	DESIG=16
$3\pi^+3\pi^-$	not seen		1749	DESIG=8;OUR EVAL;→ UNCHECKED ←
$K^+K^-\pi^+\pi^-$	not seen		1700	DESIG=6
$K^{*0}\overline{K}^{*0}$	not seen		1585	DESIG=17
$K^+K^-\pi^+\pi^-\pi^0$	(1.4±1.0) %		1667	DESIG=9
$K^+K^-2\pi^+2\pi^-$	not seen		1627	DESIG=10;OUR EVAL;→ UNCHECKED ←
$K^0_S K^-2\pi^+\pi^-$ + c.c.	seen		1666	DESIG=11
$2K^+2K^-$	not seen		1470	DESIG=7
$\phi\phi$	not seen		1506	DESIG=18
$p\overline{p}$	seen		1558	DESIG=3
$p\overline{p}\pi^+\pi^-$	seen		1461	DESIG=22
$\gamma\gamma$	(1.9±1.3) × 10^{-4}		1819	DESIG=2
$\gamma J/\psi(1S)$	< 1.4 %	90%	500	DESIG=21
$\pi^+\pi^-\eta$	not seen		1766	DESIG=12;OUR EVAL;→ UNCHECKED ←
$\pi^+\pi^-\eta'$	not seen		1680	DESIG=13;OUR EVAL;→ UNCHECKED ←
$\pi^+\pi^-\eta_c(1S)$	< 25 %	90%	537	DESIG=15

$\psi(2S)$

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

NODE=M071

Mass m = 3686.10 ± 0.06 MeV (S = 5.9) NODE=M071M;DTYPE=M

Full width Γ = 294 ± 8 keV NODE=M071W;DTYPE=G

$\psi(2S)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
hadrons	(97.85 ±0.13) %		–	NODE=M071220;DESIG=3
virtual $\gamma \rightarrow$ hadrons	(1.73 ±0.14) %	S=1.5	–	DESIG=4
ggg	(10.6 ±1.6) %		–	DESIG=255
γgg	(1.03 ±0.29) %		–	DESIG=256
light hadrons	(15.4 ±1.5) %		–	DESIG=226
e^+e^-	(7.93 ±0.17) × 10^{-3}		1843	DESIG=1
$\mu^+\mu^-$	(8.0 ±0.6) × 10^{-3}		1840	DESIG=2
$\tau^+\tau^-$	(3.1 ±0.4) × 10^{-3}		489	DESIG=68
Decays into $J/\psi(1S)$ and anything				NODE=M071;CLUMP=A
$J/\psi(1S)$ anything	(61.4 ±0.6) %		–	DESIG=11
$J/\psi(1S)$ neutrals	(25.38 ±0.32) %		–	DESIG=12
$J/\psi(1S)\pi^+\pi^-$	(34.68 ±0.30) %		477	DESIG=13
$J/\psi(1S)\pi^0\pi^0$	(18.24 ±0.31) %		481	DESIG=14
$J/\psi(1S)\eta$	(3.37 ±0.05) %		199	DESIG=15
$J/\psi(1S)\pi^0$	(1.268±0.032) × 10^{-3}		528	DESIG=18
Hadronic decays				NODE=M071;CLUMP=B
$\pi^0 h_c(1P)$	(8.6 ±1.3) × 10^{-4}		85	DESIG=254
$3(\pi^+\pi^-)\pi^0$	(3.5 ±1.6) × 10^{-3}		1746	DESIG=37
$2(\pi^+\pi^-)\pi^0$	(2.9 ±1.0) × 10^{-3}	S=4.7	1799	DESIG=25
$\rho a_2(1320)$	(2.6 ±0.9) × 10^{-4}		1501	DESIG=65
$\pi^+\pi^-\pi^0\pi^0\pi^0$	(5.3 ±0.9) × 10^{-3}		1800	DESIG=312
$\rho^\pm\pi^\mp\pi^0\pi^0$	< 2.7 × 10^{-3}	CL=90%	1737	DESIG=315
$p\overline{p}$	(2.94 ±0.08) × 10^{-4}		1586	DESIG=27
$n\overline{n}$	(3.06 ±0.15) × 10^{-4}		1586	DESIG=309
$\Delta^{++}\overline{\Delta}^{--}$	(1.28 ±0.35) × 10^{-4}		1371	DESIG=70
$\Lambda\overline{\Lambda}\pi^0$	< 2.9 × 10^{-6}	CL=90%	1412	DESIG=238
$\Lambda\overline{\Lambda}\eta$	(2.5 ±0.4) × 10^{-5}		1197	DESIG=239
$\Lambda\overline{p}K^+$	(1.00 ±0.14) × 10^{-4}		1327	DESIG=214
$K^*(892)^+\overline{p}\Lambda$ + c.c.	(6.3 ±0.7) × 10^{-5}		1087	DESIG=321

$\Lambda\overline{p}K^+\pi^+\pi^-$	$(1.8 \pm 0.4) \times 10^{-4}$		1167	DESIG=215
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$(2.8 \pm 0.6) \times 10^{-4}$		1346	DESIG=213
$\Lambda\overline{\Lambda}$	$(3.81 \pm 0.13) \times 10^{-4}$	S=1.4	1467	DESIG=28
$\Lambda\overline{\Sigma}^+\pi^-$ + c.c.	$(1.40 \pm 0.13) \times 10^{-4}$		1376	DESIG=280
$\Lambda\overline{\Sigma}^-\pi^+$ + c.c.	$(1.54 \pm 0.14) \times 10^{-4}$		1379	DESIG=281
$\Lambda\overline{\Sigma}^0$	$(1.23 \pm 0.24) \times 10^{-5}$		1437	DESIG=307
$\Sigma^0\overline{p}K^+$ + c.c.	$(1.67 \pm 0.18) \times 10^{-5}$		1291	DESIG=274
$\Sigma^+\overline{\Sigma}^-$	$(2.32 \pm 0.12) \times 10^{-4}$		1408	DESIG=223
$\Sigma^0\overline{\Sigma}^0$	$(2.35 \pm 0.09) \times 10^{-4}$	S=1.1	1405	DESIG=71
$\Sigma(1385)^+\overline{\Sigma}(1385)^-$	$(8.5 \pm 0.7) \times 10^{-5}$		1218	DESIG=72
$\Sigma(1385)^-\overline{\Sigma}(1385)^+$	$(8.5 \pm 0.8) \times 10^{-5}$		1218	DESIG=297
$\Sigma(1385)^0\overline{\Sigma}(1385)^0$	$(6.9 \pm 0.7) \times 10^{-5}$		1218	DESIG=299
$\Xi^-\overline{\Xi}^+$	$(2.87 \pm 0.11) \times 10^{-4}$	S=1.1	1284	DESIG=29
$\Xi^0\overline{\Xi}^0$	$(2.3 \pm 0.4) \times 10^{-4}$	S=4.2	1291	DESIG=224
$\Xi(1530)^0\overline{\Xi}(1530)^0$	$(5.2 \, {}^{+3.2}_{-1.2}) \times 10^{-5}$		1025	DESIG=73
$K^-\Lambda\overline{\Xi}^+$ + c.c.	$(3.9 \pm 0.4) \times 10^{-5}$		1114	DESIG=293
$\Xi(1530)^-\overline{\Xi}(1530)^+$	$(1.15 \pm 0.07) \times 10^{-4}$		1025	DESIG=322
$\Xi(1530)^-\overline{\Xi}^+$	$(7.0 \pm 1.2) \times 10^{-6}$		1165	DESIG=323
$\Xi(1690)^-\overline{\Xi}^+ \to K^-\Lambda\overline{\Xi}^+$ + c.c.	$(5.2 \pm 1.6) \times 10^{-6}$		–	DESIG=294
$\Xi(1820)^-\overline{\Xi}^+ \to K^-\Lambda\overline{\Xi}^+$ + c.c.	$(1.20 \pm 0.32) \times 10^{-5}$		–	DESIG=295
$K^-\Sigma^0\overline{\Xi}^+$ + c.c.	$(3.7 \pm 0.4) \times 10^{-5}$		1060	DESIG=296
$\Omega^-\overline{\Omega}^+$	$(5.66 \pm 0.30) \times 10^{-5}$	S=1.3	774	DESIG=74
$\pi^0 p\overline{p}$	$(1.53 \pm 0.07) \times 10^{-4}$		1543	DESIG=35
$N(940)\overline{p}$ + c.c. $\to \pi^0 p\overline{p}$	$(6.4 \, {}^{+1.8}_{-1.3}) \times 10^{-5}$		–	DESIG=267
$N(1440)\overline{p}$ + c.c. $\to \pi^0 p\overline{p}$	$(7.3 \, {}^{+1.7}_{-1.5}) \times 10^{-5}$	S=2.5	–	DESIG=261
$N(1520)\overline{p}$ + c.c. $\to \pi^0 p\overline{p}$	$(6.4 \, {}^{+2.3}_{-1.8}) \times 10^{-6}$		–	DESIG=268
$N(1535)\overline{p}$ + c.c. $\to \pi^0 p\overline{p}$	$(2.5 \pm 1.0) \times 10^{-5}$		–	DESIG=269
$N(1650)\overline{p}$ + c.c. $\to \pi^0 p\overline{p}$	$(3.8 \, {}^{+1.4}_{-1.7}) \times 10^{-5}$		–	DESIG=270
$N(1720)\overline{p}$ + c.c. $\to \pi^0 p\overline{p}$	$(1.79 \, {}^{+0.26}_{-0.70}) \times 10^{-5}$		–	DESIG=271
$N(2300)\overline{p}$ + c.c. $\to \pi^0 p\overline{p}$	$(2.6 \, {}^{+1.2}_{-0.7}) \times 10^{-5}$		–	DESIG=272
$N(2570)\overline{p}$ + c.c. $\to \pi^0 p\overline{p}$	$(2.13 \, {}^{+0.40}_{-0.31}) \times 10^{-5}$		–	DESIG=273
$\eta p\overline{p}$	$(6.0 \pm 0.4) \times 10^{-5}$		1373	DESIG=200
$N(1535)\overline{p}$ + c.c. $\to \eta p\overline{p}$	$(4.4 \pm 0.7) \times 10^{-5}$		–	DESIG=264
$\omega p\overline{p}$	$(6.9 \pm 2.1) \times 10^{-5}$		1247	DESIG=77
$\eta' p\overline{p}$	$(1.10 \pm 0.13) \times 10^{-5}$		1141	DESIG=317
$\phi p\overline{p}$	$(6.1 \pm 0.6) \times 10^{-6}$		1109	DESIG=80
$\phi X(1835) \to \phi p\overline{p}$	$< 1.82 \times 10^{-7}$	CL=90%	–	DESIG=318
$\pi^+\pi^- p\overline{p}$	$(6.0 \pm 0.4) \times 10^{-4}$		1491	DESIG=31
$p\overline{n}\pi^-$ or c.c.	$(2.48 \pm 0.17) \times 10^{-4}$		–	DESIG=227
$p\overline{n}\pi^-\pi^0$	$(3.2 \pm 0.7) \times 10^{-4}$		1492	DESIG=228
$2(\pi^+\pi^-\pi^0)$	$(4.8 \pm 1.5) \times 10^{-3}$		1776	DESIG=221
$\eta\pi^+\pi^-$	$< 1.6 \times 10^{-4}$	CL=90%	1791	DESIG=202
$\eta\pi^+\pi^-\pi^0$	$(9.5 \pm 1.7) \times 10^{-4}$		1778	DESIG=203
$2(\pi^+\pi^-)\eta$	$(1.2 \pm 0.6) \times 10^{-3}$		1758	DESIG=251
$\pi^+\pi^-\pi^0\pi^0\eta$	$< 4 \times 10^{-4}$	CL=90%	1760	DESIG=313
$\eta'\pi^+\pi^-\pi^0$	$(4.5 \pm 2.1) \times 10^{-4}$		1692	DESIG=204
$\omega\pi^+\pi^-$	$(7.3 \pm 1.2) \times 10^{-4}$	S=2.1	1748	DESIG=75
$b_1^\pm\pi^\mp$	$(4.0 \pm 0.6) \times 10^{-4}$	S=1.1	1635	DESIG=40
$b_1^0\pi^0$	$(2.4 \pm 0.6) \times 10^{-4}$		–	DESIG=193
$\omega f_2(1270)$	$(2.2 \pm 0.4) \times 10^{-4}$		1515	DESIG=64
$\omega\pi^0\pi^0$	$(1.11 \pm 0.35) \times 10^{-3}$		1749	DESIG=314
$\pi^0\pi^0 K^+K^-$	$(2.6 \pm 1.3) \times 10^{-4}$		1728	DESIG=298
$\pi^+\pi^- K^+K^-$	$(7.3 \pm 0.5) \times 10^{-4}$		1726	DESIG=26

$\pi^0\pi^0 K_S^0 K_L^0$	$(1.3 \pm 0.6) \times 10^{-3}$	1726	DESIG=304
$\rho^0 K^+ K^-$	$(2.2 \pm 0.4) \times 10^{-4}$	1616	DESIG=205
$K^*(892)^0 \overline{K}_2^*(1430)^0$	$(1.9 \pm 0.5) \times 10^{-4}$	1417	DESIG=66
$K^+ K^- \pi^+ \pi^- \eta$	$(1.3 \pm 0.7) \times 10^{-3}$	1574	DESIG=252
$K^+ K^- 2(\pi^+\pi^-)\pi^0$	$(1.00 \pm 0.31) \times 10^{-3}$	1611	DESIG=240
$K^+ K^- 2(\pi^+\pi^-)$	$(1.9 \pm 0.9) \times 10^{-3}$	1654	DESIG=222
$K_1(1270)^\pm K^\mp$	$(1.00 \pm 0.28) \times 10^{-3}$	1588	DESIG=41
$K_S^0 K_S^0 \pi^+\pi^-$	$(2.2 \pm 0.4) \times 10^{-4}$	1724	DESIG=225
$\rho^0 p \overline{p}$	$(5.0 \pm 2.2) \times 10^{-5}$	1252	DESIG=210
$K^+ \overline{K}^*(892)^0 \pi^-$ + c.c.	$(6.7 \pm 2.5) \times 10^{-4}$	1674	DESIG=34
$2(\pi^+\pi^-)$	$(2.4 \pm 0.6) \times 10^{-4}$ S=2.2	1817	DESIG=24
$\rho^0 \pi^+\pi^-$	$(2.2 \pm 0.6) \times 10^{-4}$ S=1.4	1750	DESIG=33
$K^+ K^- \pi^+\pi^-\pi^0$	$(1.26 \pm 0.09) \times 10^{-3}$	1694	DESIG=206
$\omega f_0(1710) \rightarrow \omega K^+ K^-$	$(5.9 \pm 2.2) \times 10^{-5}$	–	DESIG=216
$K^*(892)^0 K^- \pi^+\pi^0$ + c.c.	$(8.6 \pm 2.2) \times 10^{-4}$	–	DESIG=217
$K^*(892)^+ K^- \pi^+\pi^-$ + c.c.	$(9.6 \pm 2.8) \times 10^{-4}$	–	DESIG=218
$K^*(892)^+ K^- \rho^0$ + c.c.	$(7.3 \pm 2.6) \times 10^{-4}$	–	DESIG=219
$K^*(892)^0 K^- \rho^+$ + c.c.	$(6.1 \pm 1.8) \times 10^{-4}$	–	DESIG=220
$\eta K^+ K^-$, no $\eta\phi$	$(3.49 \pm 0.17) \times 10^{-5}$	1664	DESIG=207
$\omega K^+ K^-$	$(1.62 \pm 0.11) \times 10^{-4}$ S=1.1	1614	DESIG=76
$\omega K^*(892)^+ K^-$ + c.c.	$(2.07 \pm 0.26) \times 10^{-4}$	1482	DESIG=276
$\omega K_2^*(1430)^+ K^-$ + c.c.	$(6.1 \pm 1.2) \times 10^{-5}$	1252	DESIG=277
$\omega \overline{K}^*(892)^0 K^0$	$(1.68 \pm 0.30) \times 10^{-4}$	1481	DESIG=278
$\omega \overline{K}_2^*(1430)^0 K^0$	$(5.8 \pm 2.2) \times 10^{-5}$	1250	DESIG=279
$\omega X(1440) \rightarrow \omega K_S^0 K^- \pi^+$ + c.c.	$(1.6 \pm 0.4) \times 10^{-5}$	–	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
$3(\pi^+\pi^-)$	$(3.5 \pm 2.0) \times 10^{-4}$ S=2.8	1774	DESIG=32
$p \overline{p} \pi^+\pi^-\pi^0$	$(7.3 \pm 0.7) \times 10^{-4}$	1435	DESIG=211
$K^+ K^-$	$(7.5 \pm 0.5) \times 10^{-5}$	1776	DESIG=23
$K_S^0 K_L^0$	$(5.34 \pm 0.33) \times 10^{-5}$	1775	DESIG=85
$\pi^+\pi^-\pi^0$	$(2.01 \pm 0.17) \times 10^{-4}$ S=1.7	1830	DESIG=36
$\rho(2150)\pi \rightarrow \pi^+\pi^-\pi^0$	$(1.9 \, {}^{+1.2}_{-0.4}) \times 10^{-4}$	–	DESIG=201
$\rho(770)\pi \rightarrow \pi^+\pi^-\pi^0$	$(3.2 \pm 1.2) \times 10^{-5}$ S=1.8	–	DESIG=22
$\pi^+\pi^-$	$(7.8 \pm 2.6) \times 10^{-6}$	1838	DESIG=21
$K_1(1400)^\pm K^\mp$	$< 3.1 \times 10^{-4}$ CL=90%	1532	DESIG=42
$K_2^*(1430)^\pm K^\mp$	$(7.1 \, {}^{+1.3}_{-0.9}) \times 10^{-5}$	–	DESIG=265
$K^+ K^-\pi^0$	$(4.07 \pm 0.31) \times 10^{-5}$	1754	DESIG=38
$K_S^0 K_L^0 \pi^0$	$< 3.0 \times 10^{-4}$ CL=90%	1753	DESIG=303
$K_S^0 K_L^0 \eta$	$(1.3 \pm 0.5) \times 10^{-3}$	1661	DESIG=305
$K^+ K^*(892)^-$ + c.c.	$(2.9 \pm 0.4) \times 10^{-5}$ S=1.2	1698	DESIG=39
$K^*(892)^0 \overline{K}^0$ + c.c.	$(1.09 \pm 0.20) \times 10^{-4}$	1697	DESIG=194
$\phi\pi^+\pi^-$	$(1.18 \pm 0.26) \times 10^{-4}$ 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
$2(K^+ K^-)$	$(6.3 \pm 1.3) \times 10^{-5}$	1499	DESIG=208
$\phi K^+ K^-$	$(7.0 \pm 1.6) \times 10^{-5}$	1546	DESIG=79
$2(K^+ K^-)\pi^0$	$(1.10 \pm 0.28) \times 10^{-4}$	1440	DESIG=209
$\phi\eta$	$(3.10 \pm 0.31) \times 10^{-5}$	1654	DESIG=89
$\eta\phi(2170)$, $\phi(2170) \rightarrow \phi f_0(980)$, $f_0 \rightarrow \pi^+\pi^-$	$< 2.2 \times 10^{-6}$ CL=90%	–	DESIG=316
$\phi\eta'$	$(1.54 \pm 0.20) \times 10^{-5}$	1555	DESIG=90
$\phi f_1(1285)$	$(3.0 \pm 1.3) \times 10^{-5}$	1436	DESIG=319
$\phi\eta(1405) \rightarrow \phi\pi^+\pi^-\eta$	$(8.5 \pm 1.7) \times 10^{-6}$	–	DESIG=320

$\omega\eta'$	$(3.2 \ ^{+2.5}_{-2.1}) \times 10^{-5}$		1623	DESIG=91
$\omega\pi^0$	$(2.1 \pm 0.6) \times 10^{-5}$		1757	DESIG=92
$\rho\eta'$	$(1.9 \ ^{+1.7}_{-1.2}) \times 10^{-5}$		1625	DESIG=93
$\rho\eta$	$(2.2 \pm 0.6) \times 10^{-5}$	S=1.1	1717	DESIG=94
$\omega\eta$	$< 1.1 \times 10^{-5}$	CL=90%	1715	DESIG=95
$\phi\pi^0$	$< 4 \times 10^{-7}$	CL=90%	1699	DESIG=96
$\eta_c\pi^+\pi^-\pi^0$	$< 1.0 \times 10^{-3}$	CL=90%	512	DESIG=229
$p\overline{p}K^+K^-$	$(2.7 \pm 0.7) \times 10^{-5}$		1118	DESIG=212
$\overline{\Lambda}nK^0_S$ + c.c.	$(8.1 \pm 1.8) \times 10^{-5}$		1324	DESIG=237
$\phi f'_2(1525)$	$(4.4 \pm 1.6) \times 10^{-5}$		1325	DESIG=67
$\Theta(1540)\overline{\Theta}(1540) \rightarrow K^0_S pK^-\overline{n}$ + c.c.	$< 8.8 \times 10^{-6}$	CL=90%	–	DESIG=195
$\Theta(1540)K^-\overline{n} \rightarrow K^0_S pK^-\overline{n}$	$< 1.0 \times 10^{-5}$	CL=90%	–	DESIG=196
$\Theta(1540)K^0_S\overline{p} \rightarrow K^0_S\overline{p}K^+n$	$< 7.0 \times 10^{-6}$	CL=90%	–	DESIG=197
$\overline{\Theta}(1540)K^+n \rightarrow K^0_S\overline{p}K^+n$	$< 2.6 \times 10^{-5}$	CL=90%	–	DESIG=198
$\overline{\Theta}(1540)K^0_S p \rightarrow K^0_S pK^-\overline{n}$	$< 6.0 \times 10^{-6}$	CL=90%	–	DESIG=199
$K^0_S K^0_S$	$< 4.6 \times 10^{-6}$		1775	DESIG=86
$\Lambda_c^+\overline{p}e^+e^-$ + c.c.	$< 1.7 \times 10^{-6}$	CL=90%	830	DESIG=310

Radiative decays NODE=M071;CLUMP=C

$\gamma\chi_{c0}(1P)$	(9.79 ± 0.20) %		261	DESIG=56
$\gamma\chi_{c1}(1P)$	(9.75 ± 0.24) %		171	DESIG=58
$\gamma\chi_{c2}(1P)$	(9.52 ± 0.20) %		128	DESIG=59
$\gamma\eta_c(1S)$	$(3.4 \pm 0.5) \times 10^{-3}$	S=1.3	635	DESIG=61
$\gamma\eta_c(2S)$	$(7 \pm 5) \times 10^{-4}$		48	DESIG=63
$\gamma\pi^0$	$(1.04 \pm 0.22) \times 10^{-6}$	S=1.4	1841	DESIG=52
$\gamma\eta'(958)$	$(1.24 \pm 0.04) \times 10^{-4}$		1719	DESIG=54
$\gamma f_2(1270)$	$(2.73 \ ^{+0.29}_{-0.25}) \times 10^{-4}$	S=1.8	1622	DESIG=82
$\gamma f_0(1370) \rightarrow \gamma K\overline{K}$	$(3.1 \pm 1.7) \times 10^{-5}$		1588	DESIG=286
$\gamma f_0(1500)$	$(9.3 \pm 1.9) \times 10^{-5}$		1535	DESIG=287
$\gamma f'_2(1525)$	$(3.3 \pm 0.8) \times 10^{-5}$		1531	DESIG=288
$\gamma f_0(1710) \rightarrow \gamma\pi\pi$	$(3.5 \pm 0.6) \times 10^{-5}$		–	DESIG=83
$\gamma f_0(1710) \rightarrow \gamma K\overline{K}$	$(6.6 \pm 0.7) \times 10^{-5}$		–	DESIG=84
$\gamma f_0(2100) \rightarrow \gamma\pi\pi$	$(4.8 \pm 1.0) \times 10^{-6}$		1244	DESIG=289
$\gamma f_0(2200) \rightarrow \gamma K\overline{K}$	$(3.2 \pm 1.0) \times 10^{-6}$		1193	DESIG=290
$\gamma f_J(2220) \rightarrow \gamma\pi\pi$	$< 5.8 \times 10^{-6}$	CL=90%	1168	DESIG=291
$\gamma f_J(2220) \rightarrow \gamma K\overline{K}$	$< 9.5 \times 10^{-6}$	CL=90%	1168	DESIG=292
$\gamma\gamma$	$< 1.5 \times 10^{-4}$	CL=90%	1843	DESIG=51
$\gamma\eta$	$(9.2 \pm 1.8) \times 10^{-7}$		1802	DESIG=53
$\gamma\eta\pi^+\pi^-$	$(8.7 \pm 2.1) \times 10^{-4}$		1791	DESIG=230
$\gamma\eta(1405) \rightarrow \gamma K\overline{K}\pi$	$< 9 \times 10^{-5}$	CL=90%	1569	DESIG=62
$\gamma\eta(1405) \rightarrow \eta\pi^+\pi^-$	$(3.6 \pm 2.5) \times 10^{-5}$		–	DESIG=232
$\gamma\eta(1405) \rightarrow \gamma f_0(980)\pi^0 \rightarrow \gamma\pi^+\pi^-\pi^0$	$< 5.0 \times 10^{-7}$	CL=90%	–	DESIG=308
$\gamma\eta(1475) \rightarrow K\overline{K}\pi$	$< 1.4 \times 10^{-4}$	CL=90%	–	DESIG=234
$\gamma\eta(1475) \rightarrow \eta\pi^+\pi^-$	$< 8.8 \times 10^{-5}$	CL=90%	–	DESIG=235
$\gamma 2(\pi^+\pi^-)$	$(4.0 \pm 0.6) \times 10^{-4}$		1817	DESIG=241
$\gamma K^{*0}K^+\pi^-$ + c.c.	$(3.7 \pm 0.9) \times 10^{-4}$		1674	DESIG=242
$\gamma K^{*0}\overline{K}^{*0}$	$(2.4 \pm 0.7) \times 10^{-4}$		1613	DESIG=243
$\gamma K^0_S K^+\pi^-$ + c.c.	$(2.6 \pm 0.5) \times 10^{-4}$		1753	DESIG=244
$\gamma K^+K^-\pi^+\pi^-$	$(1.9 \pm 0.5) \times 10^{-4}$		1726	DESIG=245
$\gamma p\overline{p}$	$(3.9 \pm 0.5) \times 10^{-5}$	S=2.0	1586	DESIG=246
$\gamma f_2(1950) \rightarrow \gamma p\overline{p}$	$(1.20 \pm 0.22) \times 10^{-5}$		–	DESIG=257
$\gamma f_2(2150) \rightarrow \gamma p\overline{p}$	$(7.2 \pm 1.8) \times 10^{-6}$		–	DESIG=258
$\gamma X(1835) \rightarrow \gamma p\overline{p}$	$(4.6 \ ^{+1.8}_{-4.0}) \times 10^{-6}$		–	DESIG=259

$\gamma X \to \gamma p\overline{p}$	[p]	< 2	$\times 10^{-6}$	CL=90%	–
$\gamma\pi^+\pi^- p\overline{p}$		$(2.8 \pm 1.4) \times 10^{-5}$			1491
$\gamma 2(\pi^+\pi^-)K^+K^-$		< 2.2	$\times 10^{-4}$	CL=90%	1654
$\gamma 3(\pi^+\pi^-)$		< 1.7	$\times 10^{-4}$	CL=90%	1774
$\gamma K^+K^-K^+K^-$		< 4	$\times 10^{-5}$	CL=90%	1499
$\gamma\gamma J/\psi$		$(3.1 \,^{+1.0}_{-1.2}) \times 10^{-4}$			542
$e^+e^-\eta'$		$(1.90 \pm 0.26) \times 10^{-6}$			1719
$e^+e^-\chi_{c0}(1P)$		$(1.06 \pm 0.24) \times 10^{-3}$			261
$e^+e^-\chi_{c1}(1P)$		$(8.5 \pm 0.6) \times 10^{-4}$			171
$e^+e^-\chi_{c2}(1P)$		$(7.0 \pm 0.8) \times 10^{-4}$			128
Weak decays					
$D^0 e^+e^-$ + c.c.		< 1.4	$\times 10^{-7}$	CL=90%	1371
Other decays					
invisible		< 1.6	%	CL=90%	–

$\psi(3770)$

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

Mass $m = 3773.7 \pm 0.4$ MeV (S = 1.4)

Full width $\Gamma = 27.2 \pm 1.0$ MeV

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

$\psi(3770)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
$D\overline{D}$	$(93 \,^{+8}_{-9})$ %	S=2.0	287
$D^0\overline{D}^0$	$(52 \,^{+4}_{-5})$ %	S=2.0	287
D^+D^-	(41 ± 4) %	S=2.0	254
$J/\psi\pi^+\pi^-$	$(1.93 \pm 0.28) \times 10^{-3}$		561
$J/\psi\pi^0\pi^0$	$(8.0 \pm 3.0) \times 10^{-4}$		565
$J/\psi\eta$	$(9 \pm 4) \times 10^{-4}$		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
Decays to light hadrons			
$b_1(1235)\pi$	$< 1.4 \times 10^{-5}$	CL=90%	1684
$\phi\eta'$	$< 7 \times 10^{-4}$	CL=90%	1607
$\omega\eta'$	$< 4 \times 10^{-4}$	CL=90%	1672
$\rho^0\eta'$	$< 6 \times 10^{-4}$	CL=90%	1674
$\phi\eta$	$(3.1 \pm 0.7) \times 10^{-4}$		1703
$\omega\eta$	$< 1.4 \times 10^{-5}$	CL=90%	1762
$\rho^0\eta$	$< 5 \times 10^{-4}$	CL=90%	1764
$\phi\pi^0$	$< 3 \times 10^{-5}$	CL=90%	1746
$\omega\pi^0$	$< 6 \times 10^{-4}$	CL=90%	1803
$\pi^+\pi^-\pi^0$	$< 5 \times 10^{-6}$	CL=90%	1874
$\rho\pi$	$< 5 \times 10^{-6}$	CL=90%	1805
$K^*(892)^+K^-$ + c.c.	$< 1.4 \times 10^{-5}$	CL=90%	1745
$K^*(892)^0\overline{K}^0$ + c.c.	$< 1.2 \times 10^{-3}$	CL=90%	1745
$K^0_S K^0_L$	$< 1.2 \times 10^{-5}$	CL=90%	1820
$2(\pi^+\pi^-)$	$< 1.12 \times 10^{-3}$	CL=90%	1861
$2(\pi^+\pi^-)\pi^0$	$< 1.06 \times 10^{-3}$	CL=90%	1844
$2(\pi^+\pi^-\pi^0)$	< 5.85 %	CL=90%	1821
$\omega\pi^+\pi^-$	$< 6.0 \times 10^{-4}$	CL=90%	1794
$3(\pi^+\pi^-)$	$< 9.1 \times 10^{-3}$	CL=90%	1820
$3(\pi^+\pi^-)\pi^0$	< 1.37 %	CL=90%	1792
$3(\pi^+\pi^-)2\pi^0$	< 11.74 %	CL=90%	1760

$\eta\pi^+\pi^-$	$<$	1.24	$\times 10^{-3}$	CL=90%	1836	DESIG=23
$\pi^+\pi^- 2\pi^0$	$<$	8.9	$\times 10^{-3}$	CL=90%	1862	DESIG=206
$\rho^0\pi^+\pi^-$	$<$	6.9	$\times 10^{-3}$	CL=90%	1796	DESIG=64
$\eta 3\pi$	$<$	1.34	$\times 10^{-3}$	CL=90%	1824	DESIG=25
$\eta 2(\pi^+\pi^-)$	$<$	2.43	%	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
$K^{*0}K^-\pi^+\pi^0$ + c.c.	$<$	1.62	%	CL=90%	1694	DESIG=70
$K^{*+}K^-\pi^+\pi^-$ + 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
$K^0_S K^-\pi^+$	$<$	3.2	$\times 10^{-3}$	CL=90%	1799	DESIG=200
$K^0_S K^-\pi^+\pi^0$	$<$	1.33	%	CL=90%	1773	DESIG=201
$K^0_S K^-\rho^+$	$<$	6.6	$\times 10^{-3}$	CL=90%	1665	DESIG=214
$K^0_S K^- 2\pi^+\pi^-$	$<$	8.7	$\times 10^{-3}$	CL=90%	1740	DESIG=202
$K^0_S K^-\pi^+\rho^0$	$<$	1.6	%	CL=90%	1621	DESIG=215
$K^0_S K^-\pi^+\eta$	$<$	1.3	%	CL=90%	1670	DESIG=216
$K^0_S K^- 2\pi^+\pi^-\pi^0$	$<$	4.18	%	CL=90%	1703	DESIG=203
$K^0_S K^- 2\pi^+\pi^-\eta$	$<$	4.8	%	CL=90%	1570	DESIG=217
$K^0_S K^-\pi^+ 2(\pi^+\pi^-)$	$<$	1.22	%	CL=90%	1658	DESIG=204
$K^0_S K^-\pi^+ 2\pi^0$	$<$	2.65	%	CL=90%	1742	DESIG=205
$K^0_S K^-K^+K^-\pi^+$	$<$	4.9	$\times 10^{-3}$	CL=90%	1491	DESIG=218
$K^0_S K^-K^+K^-\pi^+\pi^0$	$<$	3.0	%	CL=90%	1427	DESIG=219
$K^0_S K^-K^+K^-\pi^+\eta$	$<$	2.2	%	CL=90%	1214	DESIG=220
$K^{*0}K^-\pi^+$ + c.c.	$<$	9.7	$\times 10^{-3}$	CL=90%	1722	DESIG=60
$p\bar{p}\pi^0$	$<$	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
$\Sigma^+\overline{\Sigma}^-$	$<$	1.0	$\times 10^{-4}$	CL=90%	1465	DESIG=227
$\Sigma^0\overline{\Sigma}^0$	$<$	4	$\times 10^{-5}$	CL=90%	1462	DESIG=228
$\Xi^+\overline{\Xi}^-$	$<$	1.5	$\times 10^{-4}$	CL=90%	1347	DESIG=229
$\Xi^0\overline{\Xi}^0$	$<$	1.4	$\times 10^{-4}$	CL=90%	1353	DESIG=230

Radiative decays

NODE=M053;CLUMP=R

$\gamma\chi_{c2}$	$<$ 6.4	$\times 10^{-4}$	CL=90%	211	DESIG=51
$\gamma\chi_{c1}$	(2.49±0.23)	$\times 10^{-3}$		254	DESIG=50
$\gamma\chi_{c0}$	(6.9 ±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%	134	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.

NODE=M212

was $\psi(3823)$, $X(3823)$

Mass $m = 3823.7 \pm 0.5$ MeV (S = 1.1)
NODE=M212M;DTYPE=M

Full width $\Gamma < 5.2$ MeV, CL = 90%
NODE=M212W;DTYPE=G

$\psi_2(3823)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$J/\psi(1S)\pi^+\pi^-$	seen	607	NODE=M212215;DESIG=3
$\chi_{c1}\gamma$	seen	300	DESIG=1
$\chi_{c2}\gamma$	not seen	258	DESIG=2

$\psi_3(3842)$

$I^G(J^{PC}) = 0^-(3^{--})$
J, *P* need confirmation.

NODE=M241

Seen by a single experiment only.

Mass $m = 3842.71 \pm 0.20$ MeV
NODE=M241M;DTYPE=M

Full width $\Gamma = 2.8 \pm 0.6$ MeV
NODE=M241W;DTYPE=G

$\psi_3(3842)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
D^+D^-	seen	443	NODE=M241215;DESIG=1
$D^0\overline{D}^0$	seen	463	DESIG=2

$\chi_{c1}(3872)$

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

NODE=M176

also known as $X(3872)$

Mass $m = 3871.65 \pm 0.06$ MeV
NODE=M176M;DTYPE=M

$m_{\chi_{c1}(3872)} - m_{J/\psi} = 775 \pm 4$ MeV
NODE=M176DM;DTYPE=D

Full width $\Gamma = 1.19 \pm 0.21$ MeV (S = 1.1)
NODE=M176W;DTYPE=G

$\chi_{c1}(3872)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
e^+e^-	$< 3.2 \times 10^{-6}$	90%	1936	NODE=M176215;DESIG=1
$\pi^+\pi^- J/\psi(1S)$	(3.4 ± 0.7) %		650	DESIG=2
$\pi^+\pi^-\pi^0 J/\psi(1S)$	not seen		588	DESIG=25
$\omega\eta_c(1S)$	< 30 %	90%	368	DESIG=24
$\omega J/\psi(1S)$	(3.9 ± 1.6) %		†	DESIG=13
$\phi\phi$	not seen		1646	DESIG=26
$D^0\overline{D}^0\pi^0$	$(44\ ^{+16}_{-18})$ %		116	DESIG=8
$\overline{D}^{*0}D^0$	(33 ± 8) %		†	DESIG=12
$\gamma\gamma$	< 10 %	90%	1936	DESIG=5
$D^0\overline{D}^0$	< 26 %	90%	519	DESIG=6
D^+D^-	< 17 %	90%	502	DESIG=7
$\pi^0\chi_{c2}$	< 4 %	90%	273	DESIG=20
$\pi^0\chi_{c1}$	$(3.0^{+1.3}_{-1.1})$ %		319	DESIG=18
$\pi^0\chi_{c0}$	< 70 %	90%	–	DESIG=19
$\pi^+\pi^-\eta_c(1S)$	< 13 %	90%	745	DESIG=14
$\pi^+\pi^-\chi_{c1}$	$< 6 \times 10^{-3}$	90%	218	DESIG=17
$p\overline{p}$	$< 2.2 \times 10^{-5}$	95%	1693	DESIG=16
Radiative decays				NODE=M176;CLUMP=B
γD^+D^-	< 3.4 %	90%	502	DESIG=21
$\gamma\overline{D}^0D^0$	< 5 %	90%	519	DESIG=23
$\gamma J/\psi$	$(7.7 \pm 2.5) \times 10^{-3}$		697	DESIG=9
$\gamma\chi_{c1}$	$< 8 \times 10^{-3}$	90%	344	DESIG=3
$\gamma\chi_{c2}$	< 2.9 %	90%	303	DESIG=15
$\gamma\psi(2S)$	(4.1 ± 1.4) %		181	DESIG=11
***C*-violating decays**				NODE=M176;CLUMP=A
$\eta J/\psi$	< 1.6 %	90%	491	DESIG=4

$Z_c(3900)$

$I^G(J^{PC}) = 1^+(1^{+-})$ NODE=M210

was $X(3900)$

Mass $m = 3887.1 \pm 2.6$ MeV (S = 1.7) NODE=M210M;DTYPE=M
Full width $\Gamma = 28.4 \pm 2.6$ MeV NODE=M210W;DTYPE=G

$Z_c(3900)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$J/\psi\pi$	seen	699	NODE=M210215;DESIG=1
$h_c\pi^\pm$	not seen	318	DESIG=2
$\eta_c\pi^+\pi^-$	not seen	759	DESIG=10
$(D\overline{D}^*)^\pm$	seen	–	DESIG=3;OUR EVAL;→ UNCHECKED ←
D^0D^{*-} + c.c.	seen	152	DESIG=8
D^-D^{*0} + c.c.	seen	143	DESIG=9
$\omega\pi^\pm$	not seen	1862	DESIG=4
$J/\psi\eta$	not seen	510	DESIG=5
D^+D^{*-} + c.c	seen	–	DESIG=6
$D^0\overline{D}^{*0}$ + c.c	seen	–	DESIG=7

$X(3915)$

$I^G(J^{PC}) = 0^+(0 \text{ or } 2^{++})$ NODE=M159

was $\chi_{c0}(3915)$

Mass $m = 3921.7 \pm 1.8$ MeV (S = 1.5) NODE=M159M;DTYPE=M
Full width $\Gamma = 18.8 \pm 3.5$ MeV NODE=M159W;DTYPE=G

$X(3915)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\omega J/\psi$	seen	231	NODE=M159215;DESIG=1;OUR EST; → UNCHECKED ←
$\pi^+\pi^-\eta_c(1S)$	not seen	788	DESIG=4;OUR EVAL;→ UNCHECKED ←
$\eta_c\eta$	not seen	668	DESIG=6
$\eta_c\pi^0$	not seen	817	DESIG=7
$K\overline{K}$	not seen	1898	DESIG=5;OUR EVAL;→ UNCHECKED ←
$\gamma\gamma$	seen	1961	DESIG=2

$\chi_{c2}(3930)$

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

NODE=M050

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

NODE=M050M;DTYPE=M

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

NODE=M050W;DTYPE=G

$\chi_{c2}(3930)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\gamma\gamma$	seen	1961	NODE=M050215;DESIG=1;OUR EVAL; → UNCHECKED ←
$D\overline{D}$	seen	607	DESIG=2;OUR EVAL;→ UNCHECKED ←
D^+D^-	seen	592	DESIG=3;OUR EVAL;→ UNCHECKED ←
$D^0\overline{D}^0$	seen	607	DESIG=4;OUR EVAL;→ UNCHECKED ←
$\pi^+\pi^-\eta_c(1S)$	not seen	788	DESIG=7;OUR EVAL;→ UNCHECKED ←
$K\overline{K}$	not seen	1898	DESIG=8;OUR EVAL;→ UNCHECKED ←

$X(4020)^\pm$

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

NODE=M213

Mass $m = 4024.1 \pm 1.9$ MeV

NODE=M213M;DTYPE=M

Full width $\Gamma = 13 \pm 5$ MeV (S = 1.7)

NODE=M213W;DTYPE=G

$X(4020)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$h_c(1P)\pi$	seen	450	NODE=M213215;DESIG=1
$D^*\overline{D}^*$	seen	85	DESIG=2
$D\overline{D}^*$ + c.c.	not seen	542	DESIG=4
$\eta_c\pi^+\pi^-$	not seen	872	DESIG=3
$J/\psi(1S)\pi^\pm$	not seen	811	DESIG=5

$\psi(4040)$ [q]

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

NODE=M072

Mass $m = 4039 \pm 1$ MeV

NODE=M072M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 80 \pm 10$ MeV

NODE=M072W;DTYPE=G;OUR EST; → UNCHECKED ←

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

NODE=M072215;NODE=M072

$\psi(4040)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
e^+e^-	$(1.07\pm0.16)\times10^{-5}$		2019	DESIG=5
$D\overline{D}$	seen		775	DESIG=17;OUR EST;→ UNCHECKED ←
$D^0\overline{D}^0$	seen		775	DESIG=1
D^+D^-	seen		763	DESIG=18
$D^*\overline{D}+$ c.c.	seen		569	DESIG=19;OUR EST;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^0+$ c.c.	seen		575	DESIG=2
$D^*(2010)^+D^-+$ c.c.	seen		561	DESIG=20
$D^*\overline{D}^*$	seen		193	DESIG=21;OUR EST;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^*(2007)^0$	seen		226	DESIG=3
$D^*(2010)^+D^*(2010)^-$	seen		193	DESIG=22
$D^0D^-\pi^+$+c.c. (excl. $D^*(2007)^0\overline{D}^0$ +c.c., $D^*(2010)^+D^-$ +c.c.)	not seen		–	DESIG=24
$D\overline{D}^*\pi$(excl. $D^*\overline{D}^*$)	not seen		–	DESIG=25
$D^0\overline{D}^{*-}\pi^+$+c.c. (excl. $D^*(2010)^+D^*(2010)^-$)	seen		–	DESIG=26
$D_s^+D_s^-$	seen		452	DESIG=27
$J/\psi\pi^+\pi^-$	$<4\times10^{-3}$	90%	794	DESIG=7
$J/\psi\pi^0\pi^0$	$<2\times10^{-3}$	90%	797	DESIG=8
$J/\psi\eta$	$(5.2\pm0.7)\times10^{-3}$		675	DESIG=9
$J/\psi\pi^0$	$<2.8\times10^{-4}$	90%	823	DESIG=10
$J/\psi\pi^+\pi^-\pi^0$	$<2\times10^{-3}$	90%	746	DESIG=11
$\chi_{c1}\gamma$	$<3.4\times10^{-3}$	90%	494	DESIG=12
$\chi_{c2}\gamma$	$<5\times10^{-3}$	90%	454	DESIG=13
$\chi_{c1}\pi^+\pi^-\pi^0$	<1.1 %	90%	306	DESIG=14
$\chi_{c2}\pi^+\pi^-\pi^0$	<3.2 %	90%	233	DESIG=15
$h_c(1P)\pi^+\pi^-$	$<3\times10^{-3}$	90%	403	DESIG=28
$\phi\pi^+\pi^-$	$<3\times10^{-3}$	90%	1880	DESIG=16
$\Lambda\overline{\Lambda}\pi^+\pi^-$	$<2.9\times10^{-4}$	90%	1578	DESIG=29
$\Lambda\overline{\Lambda}\pi^0$	$<9\times10^{-5}$	90%	1636	DESIG=30
$\Lambda\overline{\Lambda}\eta$	$<3.0\times10^{-4}$	90%	1452	DESIG=31
$\Sigma^+\overline{\Sigma}^-$	$<1.3\times10^{-4}$	90%	1632	DESIG=32
$\Sigma^0\overline{\Sigma}^0$	$<7\times10^{-5}$	90%	1630	DESIG=33
$\Xi^+\overline{\Xi}^-$	$<1.6\times10^{-4}$	90%	1527	DESIG=34
$\Xi^0\overline{\Xi}^0$	$<1.8\times10^{-4}$	90%	1533	DESIG=35
$\mu^+\mu^-$	$(9\pm6)\times10^{-6}$		2017	DESIG=6

$\chi_{c1}(4140)$

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

NODE=M193

was $X(4140)$

Mass $m = 4146.8 \pm 2.4$ MeV (S = 1.1)
Full width $\Gamma = 22^{+8}_{-7}$ MeV (S = 1.3)

NODE=M193M;DTYPE=M
NODE=M193W;DTYPE=G

$\chi_{c1}(4140)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$J/\psi\phi$	seen	217	NODE=M193215;DESIG=1
$\gamma\gamma$	not seen	2073	DESIG=2

$\psi(4160)$ [q]

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

NODE=M025

Mass $m = 4191 \pm 5$ MeV
Full width $\Gamma = 70 \pm 10$ MeV

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

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

NODE=M025215;NODE=M025

ψ(4160) DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$e^+ e^-$	$(6.9 \pm 3.3) \times 10^{-6}$		2096	DESIG=1
$\mu^+ \mu^-$	seen		2093	DESIG=33
$D\overline{D}$	seen		956	DESIG=15;OUR EVAL;→ UNCHECKED ←
$D^0\overline{D}^0$	seen		956	DESIG=16
$D^+ D^-$	seen		947	DESIG=17
$D^*\overline{D}+$ c.c.	seen		798	DESIG=18;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^0+$ c.c.	seen		802	DESIG=19
$D^*(2010)^+ D^-+$ c.c.	seen		792	DESIG=20
$D^*\overline{D}^*$	seen		592	DESIG=21;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^*(2007)^0$	seen		604	DESIG=22
$D^*(2010)^+ D^*(2010)^-$	seen		592	DESIG=23
$D^0 D^-\pi^+$+c.c. (excl. $D^*(2007)^0\overline{D}^0$ +c.c., $D^*(2010)^+ D^-$ +c.c.)	not seen		–	DESIG=24
$D\overline{D}^*\pi$+c.c. (excl. $D^*\overline{D}^*$)	seen		–	DESIG=25
$D^0 D^{*-}\pi^+$+c.c. (excl. $D^*(2010)^+ D^*(2010)^-$)	not seen		–	DESIG=26
$D_s^+ D_s^-$	not seen		719	DESIG=27
$D_s^{*+} D_s^-$ +c.c.	seen		385	DESIG=28
$J/\psi\pi^+\pi^-$	< 3	$\times 10^{-3}$ 90%	919	DESIG=2
$J/\psi\pi^0\pi^0$	< 3	$\times 10^{-3}$ 90%	922	DESIG=3
$J/\psi K^+ K^-$	< 2	$\times 10^{-3}$ 90%	407	DESIG=4
$J/\psi\eta$	< 8	$\times 10^{-3}$ 90%	822	DESIG=5
$J/\psi\pi^0$	< 1	$\times 10^{-3}$ 90%	944	DESIG=6
$J/\psi\eta'$	< 5	$\times 10^{-3}$ 90%	457	DESIG=7
$J/\psi\pi^+\pi^-\pi^0$	< 1	$\times 10^{-3}$ 90%	879	DESIG=8
$\psi(2S)\pi^+\pi^-$	< 4	$\times 10^{-3}$ 90%	396	DESIG=9
$\chi_{c1}\gamma$	< 5	$\times 10^{-3}$ 90%	625	DESIG=10
$\chi_{c2}\gamma$	< 1.3	% 90%	587	DESIG=11
$\chi_{c1}\pi^+\pi^-\pi^0$	< 2	$\times 10^{-3}$ 90%	496	DESIG=12
$\chi_{c2}\pi^+\pi^-\pi^0$	< 8	$\times 10^{-3}$ 90%	445	DESIG=13
$h_c(1P)\pi^+\pi^-$	< 5	$\times 10^{-3}$ 90%	556	DESIG=29
$h_c(1P)\pi^0\pi^0$	< 2	$\times 10^{-3}$ 90%	560	DESIG=30
$h_c(1P)\eta$	< 2	$\times 10^{-3}$ 90%	348	DESIG=31
$h_c(1P)\pi^0$	< 4	$\times 10^{-4}$ 90%	600	DESIG=32
$\phi\pi^+\pi^-$	< 2	$\times 10^{-3}$ 90%	1961	DESIG=14
$\gamma\chi_{c1}(3872)$	< 2.0	$\times 10^{-3}$ 90%	308	DESIG=44
$\gamma X(3915) \to \gamma J/\psi\pi^+\pi^-$	< 1.36	$\times 10^{-4}$ 90%	–	DESIG=35
$\gamma X(3930) \to \gamma J/\psi\pi^+\pi^-$	< 1.18	$\times 10^{-4}$ 90%	–	DESIG=36
$\gamma X(3940) \to \gamma J/\psi\pi^+\pi^-$	< 1.47	$\times 10^{-4}$ 90%	–	DESIG=37
$\gamma X(3915) \to \gamma\gamma J/\psi$	< 1.26	$\times 10^{-4}$ 90%	–	DESIG=39
$\gamma X(3930) \to \gamma\gamma J/\psi$	< 8.8	$\times 10^{-5}$ 90%	–	DESIG=40
$\gamma X(3940) \to \gamma\gamma J/\psi$	< 1.79	$\times 10^{-4}$ 90%	–	DESIG=41
$p\overline{p}p\overline{p}$	not seen		834	DESIG=45

ψ(4230)

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

NODE=M222

also known as $Y(4230)$; was $X(4230)$

See also $\psi(4260)$ entry in Particle Listings.

Mass $m = 4220 \pm 15$ MeV — NODE=M222M;DTYPE=M;OUR EST; → UNCHECKED ←

Full width $\Gamma = 20$ to 100 MeV — NODE=M222W;DTYPE=G;OUR EST; → UNCHECKED ←

$\psi(4230)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\omega\chi_{c0}$	seen	171	NODE=M222215;DESIG=2
$\pi^+\pi^- h_c$	seen	583	DESIG=3
$\pi^0\pi^0 J/\psi$	seen	944	DESIG=9
$\pi^+\pi^- J/\psi$	seen	942	DESIG=7
$\eta J/\psi$	seen	848	DESIG=10
$\pi^+\pi^-\psi(2S)$	seen	426	DESIG=4
$\pi^+ D^0 D^{*-}$ + c.c.	seen	650	DESIG=5
$\gamma\chi_{c1}(3872)$	seen	334	DESIG=8
$\pi^+\pi^-\pi^0\eta_c$	seen	992	DESIG=11
$\pi^+\pi^-\eta_c$	not seen	1027	DESIG=13
$\gamma\pi^0\eta_c$	not seen	1049	DESIG=14
$p\overline{p}p\overline{p}$	not seen	864	DESIG=12

$\chi_{c1}(4274)$

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

NODE=M233

was $X(4274)$

Mass $m = 4274^{+8}_{-6}$ MeV
Full width $\Gamma = 49 \pm 12$ MeV

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

$\chi_{c1}(4274)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$J/\psi\phi$	seen	503	NODE=M233215;DESIG=1

$\psi(4360)$

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

NODE=M181

also known as $Y(4360)$; was $X(4360)$

$\psi(4360)$ MASS $= 4368 \pm 13$ MeV (S = 3.7)
$\psi(4360)$ WIDTH $= 96 \pm 7$ MeV

NODE=M181M;DTYPE=M
NODE=M181W;DTYPE=G

$\psi(4360)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\psi(2S)\pi^+\pi^-$	seen	573	NODE=M181215;DESIG=2;OUR EVAL; → UNCHECKED ←
$\psi_2(3823)\pi^+\pi^-$	possibly seen	438	DESIG=5
$D_1(2420)\overline{D}$ + c.c.	possibly seen	416	DESIG=10

$\psi(4415)$ [q]

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

NODE=M073

Mass $m = 4421 \pm 4$ MeV
Full width $\Gamma = 62 \pm 20$ MeV

NODE=M073M;DTYPE=M;OUR EST; → UNCHECKED ←
NODE=M073W;DTYPE=G;OUR EST; → UNCHECKED ←

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

NODE=M073215;NODE=M073

$\psi(4415)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$D\overline{D}$	seen		1187	DESIG=7;OUR EVAL;→ UNCHECKED ←
$D^0\overline{D}^0$	seen		1187	DESIG=8
D^+D^-	seen		1179	DESIG=9
$D^*\overline{D}+$ c.c.	seen		1063	DESIG=10;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^0+$ c.c.	seen		1067	DESIG=11
$D^*(2010)^+D^-+$ c.c.	seen		1059	DESIG=12
$D^*\overline{D}^*$	seen		919	DESIG=13;OUR EVAL;→ UNCHECKED ←
$D^*(2007)^0\overline{D}^*(2007)^0+$ c.c.	seen		927	DESIG=14
$D^*(2010)^+D^*(2010)^-+$ c.c.	seen		919	DESIG=15
$D^0D^-\pi^+$ (excl. $D^*(2007)^0\overline{D}^0$ +c.c., $D^*(2010)^+D^-$ +c.c.	$<$ 2.3 %	90%	–	DESIG=4
$D\overline{D}_2^*(2460)\rightarrow\ D^0D^-\pi^+$+c.c.	(10 ±4) %		–	DESIG=5
$D^0D^{*-}\pi^+$+c.c.	$<$ 11 %	90%	926	DESIG=6
$D_1(2420)\overline{D}+$ c.c.	possibly seen		537	DESIG=25
$D_s^+D_s^-$	not seen		1006	DESIG=16
$\omega\chi_{c2}$	possibly seen		330	DESIG=20
$D_s^{*+}D_s^-$ +c.c.	seen		–	DESIG=17
$D_s^{*+}D_s^{*-}$	not seen		652	DESIG=18
$\psi_2(3823)\pi^+\pi^-$	possibly seen		492	DESIG=21
$\psi(3770)\pi^+\pi^-$	possibly seen		541	DESIG=24
$J/\psi\eta$	$<$ 6 $\times 10^{-3}$	90%	1022	DESIG=19
$\chi_{c1}\gamma$	$<$ 8 $\times 10^{-4}$	90%	817	DESIG=22
$\chi_{c2}\gamma$	$<$ 4 $\times 10^{-3}$	90%	780	DESIG=23
e^+e^-	(9.4±3.2) $\times 10^{-6}$		2210	DESIG=1
$\mu^+\mu^-$	(2.0±1.0) $\times 10^{-5}$		2208	DESIG=26

$Z_c(4430)$

$I^G(J^{PC}) = 1^+(1^{+-})$
G, C need confirmation.

NODE=M195

was $X(4430)^{\pm}$

Quantum numbers not established.

Mass $m = 4478^{+15}_{-18}$ MeV
Full width $\Gamma = 181 \pm 31$ MeV

NODE=M195M;DTYPE=M
NODE=M195W;DTYPE=G

$Z_c(4430)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\pi^+\psi(2S)$	seen	711	NODE=M195215;DESIG=1
π^+J/ψ	seen	1162	DESIG=2

$\psi(4660)$

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

NODE=M189

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

$\psi(4660)$ MASS = 4630 ± 6 MeV (S = 1.4)
$\psi(4660)$ WIDTH = 62^{+9}_{-7} MeV

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

$\psi(4660)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$e^+ e^-$	not seen	2315	NODE=M189215;DESIG=1;OUR EVAL; → UNCHECKED ←
$\psi(2S)\pi^+\pi^-$	seen	809	DESIG=2;OUR EVAL;→ UNCHECKED ←
$J/\psi\eta$	not seen	1192	DESIG=4;OUR EVAL;→ UNCHECKED ←
$D^0 D^{*-}\pi^+$	not seen	1153	DESIG=3;OUR EVAL;→ UNCHECKED ←
$\chi_{c1}\gamma$	not seen	984	DESIG=6;OUR EVAL;→ UNCHECKED ←
$\chi_{c2}\gamma$	not seen	949	DESIG=7;OUR EVAL;→ UNCHECKED ←
$\Lambda_c^+\Lambda_c^-$	seen	362	DESIG=5;OUR EVAL;→ UNCHECKED ←
$D_s^+ D_{s1}(2536)^-$	seen	533	DESIG=8;OUR EVAL;→ UNCHECKED ←

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

NODE=MXXX030

$\eta_b(1S)$

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

NODE=M171

Mass $m = 9398.7 \pm 2.0$ MeV (S = 1.5)

NODE=M171M;DTYPE=M

Full width $\Gamma = 10^{+5}_{-4}$ MeV

NODE=M171W;DTYPE=G

$\eta_b(1S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
hadrons	seen		–	NODE=M171225;DESIG=7
$3h^+3h^-$	not seen		4672	DESIG=1;OUR EST;→ UNCHECKED ←
$2h^+2h^-$	not seen		4689	DESIG=2;OUR EST;→ UNCHECKED ←
$4h^+4h^-$	not seen		4648	DESIG=4;OUR EST;→ UNCHECKED ←
$\gamma\gamma$	not seen		4699	DESIG=3;OUR EST;→ UNCHECKED ←
$\mu^+\mu^-$	$<9\times10^{-3}$	90%	4698	DESIG=5
$\tau^+\tau^-$	<8 %	90%	4350	DESIG=6

$\Upsilon(1S)$

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

NODE=M049

Mass $m = 9460.30 \pm 0.26$ MeV (S = 3.3)

NODE=M049M;DTYPE=M

Full width $\Gamma = 54.02 \pm 1.25$ keV

NODE=M049W;DTYPE=G;OUR EVAL; → UNCHECKED ←

$\Upsilon(1S)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$\tau^+\tau^-$	(2.60 ±0.10) %		4384	NODE=M049215;DESIG=3
e^+e^-	(2.38 ±0.11) %		4730	DESIG=2
$\mu^+\mu^-$	(2.48 ±0.05) %		4729	DESIG=1
Hadronic decays				NODE=M049;CLUMP=A
ggg	(81.7 ±0.7) %		–	DESIG=117
γgg	(2.2 ±0.6) %		–	DESIG=118
$\eta'(958)$ anything	(2.94 ±0.24) %		–	DESIG=73
$J/\psi(1S)$ anything	(5.4 ±0.4) $\times 10^{-4}$	S=1.4	4223	DESIG=12
$J/\psi(1S)\eta_c$	< 2.2	$\times 10^{-6}$ CL=90%	3623	DESIG=146
$J/\psi(1S)\chi_{c0}$	< 3.4	$\times 10^{-6}$ CL=90%	3429	DESIG=147
$J/\psi(1S)\chi_{c1}$	(3.9 ±1.2) $\times 10^{-6}$		3382	DESIG=148
$J/\psi(1S)\chi_{c2}$	< 1.4	$\times 10^{-6}$ CL=90%	3359	DESIG=149
$J/\psi(1S)\eta_c(2S)$	< 2.2	$\times 10^{-6}$ CL=90%	3317	DESIG=150
$J/\psi(1S)X(3940)$	< 5.4	$\times 10^{-6}$ CL=90%	3148	DESIG=151
$J/\psi(1S)X(4160)$	< 5.4	$\times 10^{-6}$ CL=90%	3018	DESIG=152
$X(4350)$ anything, $X \to J/\psi(1S)\phi$	< 8.1	$\times 10^{-6}$ CL=90%	–	DESIG=167
$Z_c(3900)^\pm$ anything, $Z_c \to J/\psi(1S)\pi^\pm$	< 1.3	$\times 10^{-5}$ CL=90%	–	DESIG=168
$Z_c(4200)^\pm$ anything, $Z_c \to J/\psi(1S)\pi^\pm$	< 6.0	$\times 10^{-5}$ CL=90%	–	DESIG=169
$Z_c(4430)^\pm$ anything, $Z_c \to J/\psi(1S)\pi^\pm$	< 4.9	$\times 10^{-5}$ CL=90%	–	DESIG=170
$X_{cs}^\pm$ anything, $X \to J/\psi K^\pm$	< 5.7	$\times 10^{-6}$ CL=90%	–	DESIG=173
$\psi(4260)$ anything, $\psi \to J/\psi(1S)\pi^+\pi^-$	< 3.8	$\times 10^{-5}$ CL=90%	–	DESIG=161
$\psi(4260)$ anything, $\psi \to J/\psi(1S)K^+K^-$	< 7.5	$\times 10^{-6}$ CL=90%	–	DESIG=165
$\chi_{c1}(4140)$ anything, $\chi_{c1} \to J/\psi(1S)\phi$	< 5.2	$\times 10^{-6}$ CL=90%	–	DESIG=166
χ_{c0} anything	< 4	$\times 10^{-3}$ CL=90%	–	DESIG=5
χ_{c1} anything	(1.90 ±0.35) $\times 10^{-4}$		–	DESIG=6
$\chi_{c1}(1P)X_{tetra}$	< 3.78	$\times 10^{-5}$ CL=90%	–	DESIG=175
χ_{c2} anything	(2.8 ±0.8) $\times 10^{-4}$		–	DESIG=7
$\psi(2S)$ anything	(1.23 ±0.20) $\times 10^{-4}$		–	DESIG=8
$\psi(2S)\eta_c$	< 3.6	$\times 10^{-6}$ CL=90%	3345	DESIG=153
$\psi(2S)\chi_{c0}$	< 6.5	$\times 10^{-6}$ CL=90%	3124	DESIG=154
$\psi(2S)\chi_{c1}$	< 4.5	$\times 10^{-6}$ CL=90%	3070	DESIG=155
$\psi(2S)\chi_{c2}$	< 2.1	$\times 10^{-6}$ CL=90%	3043	DESIG=156
$\psi(2S)\eta_c(2S)$	< 3.2	$\times 10^{-6}$ CL=90%	2994	DESIG=157
$\psi(2S)X(3940)$	< 2.9	$\times 10^{-6}$ CL=90%	2797	DESIG=158
$\psi(2S)X(4160)$	< 2.9	$\times 10^{-6}$ CL=90%	2642	DESIG=159
$\psi(4260)$ anything, $\psi \to \psi(2S)\pi^+\pi^-$	< 7.9	$\times 10^{-5}$ CL=90%	–	DESIG=162
$\psi(4360)$ anything, $\psi \to \psi(2S)\pi^+\pi^-$	< 5.2	$\times 10^{-5}$ CL=90%	–	DESIG=163
$\psi(4660)$ anything, $\psi \to \psi(2S)\pi^+\pi^-$	< 2.2	$\times 10^{-5}$ CL=90%	–	DESIG=164
$X(4050)^\pm$ anything, $X \to \psi(2S)\pi^\pm$	< 8.8	$\times 10^{-5}$ CL=90%	–	DESIG=171
$Z_c(4430)^\pm$ anything, $Z_c \to \psi(2S)\pi^\pm$	< 6.7	$\times 10^{-5}$ CL=90%	–	DESIG=172
$\chi_{c1}(3872)$ anything	< 2.7	$\times 10^{-4}$ CL=90%	–	DESIG=194
$Z_c(4200)^+ Z_c(4200)^-$	< 2.23	$\times 10^{-5}$ CL=90%	–	DESIG=178
$Z_c(3900)^\pm Z_c(4200)^\mp$	< 8.1	$\times 10^{-6}$ CL=90%	–	DESIG=179

$Z_c(3900)^+ Z_c(3900)^-$		< 1.8		$\times 10^{-6}$	CL=90%	–	DESIG=180
$X(4050)^+ X(4050)^-$		< 1.58		$\times 10^{-5}$	CL=90%	–	DESIG=181
$X(4250)^+ X(4250)^-$		< 2.66		$\times 10^{-5}$	CL=90%	–	DESIG=182
$X(4050)^\pm X(4250)^\mp$		< 4.42		$\times 10^{-5}$	CL=90%	–	DESIG=183
$Z_c(4430)^+ Z_c(4430)^-$		< 2.03		$\times 10^{-5}$	CL=90%	–	DESIG=184
$X(4055)^\pm X(4055)^\mp$		< 2.33		$\times 10^{-5}$	CL=90%	–	DESIG=186
$X(4055)^\pm Z_c(4430)^\mp$		< 4.55		$\times 10^{-5}$	CL=90%	–	DESIG=189
$\rho\pi$		< 3.68		$\times 10^{-6}$	CL=90%	4697	DESIG=11
$\omega\pi^0$		< 3.90		$\times 10^{-6}$	CL=90%	4697	DESIG=131
$\pi^+\pi^-$		< 5		$\times 10^{-4}$	CL=90%	4728	DESIG=23
K^+K^-		< 5		$\times 10^{-4}$	CL=90%	4704	DESIG=24
$p\overline{p}$		< 5		$\times 10^{-4}$	CL=90%	4636	DESIG=25
$\pi^+\pi^-\pi^0$		(2.1 | ± 0.8)	$\times 10^{-6}$		4725	DESIG=72
ϕK^+K^-		(2.4 | ± 0.5)	$\times 10^{-6}$		4622	DESIG=136
$\omega\pi^+\pi^-$		(4.5 | ± 1.0)	$\times 10^{-6}$		4694	DESIG=137
$K^*(892)^0 K^-\pi^+ +$ c.c.		(4.4 | ± 0.8)	$\times 10^{-6}$		4667	DESIG=138
$\phi f_2'(1525)$		< 1.63		$\times 10^{-6}$	CL=90%	4551	DESIG=139
$\omega f_2(1270)$		< 1.79		$\times 10^{-6}$	CL=90%	4611	DESIG=140
$\rho(770) a_2(1320)$		< 2.24		$\times 10^{-6}$	CL=90%	4605	DESIG=141
$K^*(892)^0 \overline{K}_2^*(1430)^0 +$ c.c.		(3.0 | ± 0.8)	$\times 10^{-6}$		4578	DESIG=142
$K_1(1270)^\pm K^\mp$		< 2.41		$\times 10^{-6}$	CL=90%	4634	DESIG=143
$K_1(1400)^\pm K^\mp$		(1.0 | ± 0.4)	$\times 10^{-6}$		4613	DESIG=144
$b_1(1235)^\pm \pi^\mp$		< 1.25		$\times 10^{-6}$	CL=90%	4649	DESIG=145
$\pi^+\pi^-\pi^0\pi^0$		(1.28 | ± 0.30)	$\times 10^{-5}$		4720	DESIG=132
$K_S^0 K^+\pi^- +$ c.c.		(1.6 | ± 0.4)	$\times 10^{-6}$		4696	DESIG=133
$K^*(892)^0 \overline{K}^0 +$ c.c.		(2.9 | ± 0.9)	$\times 10^{-6}$		4675	DESIG=134
$K^*(892)^- K^+ +$ c.c.		< 1.11		$\times 10^{-6}$	CL=90%	4675	DESIG=135
$f_1(1285)$ anything		(4.6 | ± 3.1)	$\times 10^{-3}$		–	DESIG=174
$D^*(2010)^\pm$ anything		(2.52 | ± 0.20)	%		–	DESIG=30
$f_1(1285) X_{tetra}$		< 6.24		$\times 10^{-5}$	CL=90%	–	DESIG=176
$\overline{^2H}$ anything		(2.85 | ± 0.25)	$\times 10^{-5}$		–	DESIG=107
Sum of 100 exclusive modes		(1.200 | ± 0.017)	%		–	DESIG=128
Radiative decays							NODE=M049;CLUMP=B
$\gamma\pi^+\pi^-$		(6.3 | ± 1.8)	$\times 10^{-5}$		4728	DESIG=70
$\gamma\pi^0\pi^0$		(1.7 | ± 0.7)	$\times 10^{-5}$		4728	DESIG=71
$\gamma\pi\pi$(S-wave)		(4.6 | ± 0.7)	$\times 10^{-5}$		4728	DESIG=190
$\gamma\pi^0\eta$		< 2.4		$\times 10^{-6}$	CL=90%	4713	DESIG=111
γK^+K^-	[r]	(1.14 | ± 0.13)	$\times 10^{-5}$		4704	DESIG=102
$\gamma p\overline{p}$	[s]	< 6		$\times 10^{-6}$	CL=90%	4636	DESIG=103
$\gamma 2h^+2h^-$		(7.0 | ± 1.5)	$\times 10^{-4}$		4720	DESIG=20
$\gamma 3h^+3h^-$		(5.4 | ± 2.0)	$\times 10^{-4}$		4703	DESIG=21
$\gamma 4h^+4h^-$		(7.4 | ± 3.5)	$\times 10^{-4}$		4679	DESIG=22
$\gamma\pi^+\pi^-K^+K^-$		(2.9 | ± 0.9)	$\times 10^{-4}$		4686	DESIG=14
$\gamma 2\pi^+2\pi^-$		(2.5 | ± 0.9)	$\times 10^{-4}$		4720	DESIG=13
$\gamma 3\pi^+3\pi^-$		(2.5 | ± 1.2)	$\times 10^{-4}$		4703	DESIG=17
$\gamma 2\pi^+2\pi^-K^+K^-$		(2.4 | ± 1.2)	$\times 10^{-4}$		4658	DESIG=18
$\gamma\pi^+\pi^-p\overline{p}$		(1.5 | ± 0.6)	$\times 10^{-4}$		4604	DESIG=15
$\gamma 2\pi^+2\pi^-p\overline{p}$		(4 | ± 6)	$\times 10^{-5}$		4563	DESIG=19
$\gamma 2K^+2K^-$		(2.0 | ± 2.0)	$\times 10^{-5}$		4601	DESIG=16
$\gamma\eta'(958)$		< 1.9		$\times 10^{-6}$	CL=90%	4682	DESIG=55
$\gamma\eta$		< 1.0		$\times 10^{-6}$	CL=90%	4714	DESIG=54
$\gamma f_0(980)$		< 3		$\times 10^{-5}$	CL=90%	4678	DESIG=105
$\gamma f_2'(1525)$		(2.9 | ± 0.6)	$\times 10^{-5}$		4608	DESIG=52
$\gamma f_2(1270)$		(1.01 | ± 0.06)	$\times 10^{-4}$		4644	DESIG=51
$\gamma\eta(1405)$		< 8.2		$\times 10^{-5}$	CL=90%	4625	DESIG=65
$\gamma f_0(1500)$		< 1.5		$\times 10^{-5}$	CL=90%	4610	DESIG=108
$\gamma f_0(1500) \to \gamma K^+K^-$		(1.0 | ± 0.4)	$\times 10^{-5}$		–	DESIG=192
$\gamma f_0(1710)$		< 2.6		$\times 10^{-4}$	CL=90%	4577	DESIG=53
$\gamma f_0(1710) \to \gamma K^+K^-$		(1.01 | ± 0.32)	$\times 10^{-5}$		–	DESIG=112

$\gamma f_0(1710) \rightarrow \gamma\pi^+\pi^-$	(5.3	± 2.0)	$\times 10^{-6}$		–	DESIG=191
$\gamma f_0(1710) \rightarrow \gamma\pi^0\pi^0$	$<$ 1.4		$\times 10^{-6}$	CL=90%	–	DESIG=109
$\gamma f_0(1710) \rightarrow \gamma\eta\eta$	$<$ 1.8		$\times 10^{-6}$	CL=90%	–	DESIG=110
$\gamma f_4(2050)$	$<$ 5.3		$\times 10^{-5}$	CL=90%	4515	DESIG=104
$\gamma f_0(2200) \rightarrow \gamma K^+K^-$	$<$ 2		$\times 10^{-4}$	CL=90%	4475	DESIG=69
$\gamma f_J(2220) \rightarrow \gamma K^+K^-$	$<$ 8		$\times 10^{-7}$	CL=90%	4469	DESIG=60
$\gamma f_J(2220) \rightarrow \gamma\pi^+\pi^-$	$<$ 6		$\times 10^{-7}$	CL=90%	–	DESIG=61
$\gamma f_J(2220) \rightarrow \gamma p\overline{p}$	$<$ 1.1		$\times 10^{-6}$	CL=90%	–	DESIG=62
$\gamma\eta(2225) \rightarrow \gamma\phi\phi$	$<$ 3		$\times 10^{-3}$	CL=90%	4469	DESIG=68
$\gamma\eta_c(1S)$	$<$ 2.9		$\times 10^{-5}$	CL=90%	4260	DESIG=119
$\gamma\eta_c(2S)$	$<$ 4		$\times 10^{-4}$	CL=90%	4031	DESIG=193
$\gamma\chi_{c0}$	$<$ 6.6		$\times 10^{-5}$	CL=90%	4114	DESIG=120
$\gamma\chi_{c1}$	(4.7	$^{+2.4}_{-1.9}$)	$\times 10^{-5}$		4079	DESIG=121
$\gamma\chi_{c2}$	$<$ 7.6		$\times 10^{-6}$	CL=90%	4062	DESIG=122
$\gamma\chi_{c1}(3872)$	$<$ 5		$\times 10^{-5}$	CL=90%	3938	DESIG=195
$\gamma\chi_{c1}(3872),\ \chi_{c1} \rightarrow \pi^+\pi^-\pi^0 J/\psi$	$<$ 2.8		$\times 10^{-6}$	CL=90%	–	DESIG=124
$\gamma X(3915) \rightarrow \omega J/\psi$	$<$ 3.0		$\times 10^{-6}$	CL=90%	–	DESIG=125
$\gamma\chi_{c1}(4140) \rightarrow \phi J/\psi$	$<$ 2.2		$\times 10^{-6}$	CL=90%	–	DESIG=126
γX	[t] $<$ 4.5		$\times 10^{-6}$	CL=90%	–	DESIG=66
$\gamma X\overline{X}(m_X < 3.1$ GeV)	[u] $<$ 1		$\times 10^{-3}$	CL=90%	–	DESIG=67
$\gamma X\overline{X}(m_X < 4.5$ GeV)	[v] $<$ 2.4		$\times 10^{-4}$	CL=90%	–	DESIG=127
$\gamma X \rightarrow \gamma +\geq 4$ prongs	[x] $<$ 1.78		$\times 10^{-4}$	CL=95%	–	DESIG=113
$\gamma a_1^0 \rightarrow \gamma\mu^+\mu^-$	[y] $<$ 9		$\times 10^{-6}$	CL=90%	–	DESIG=114
$\gamma a_1^0 \rightarrow \gamma\tau^+\tau^-$	[r] $<$ 1.30		$\times 10^{-4}$	CL=90%	–	DESIG=115
$\gamma a_1^0 \rightarrow \gamma g g$	[z] $<$ 1		%	CL=90%	–	DESIG=129
$\gamma a_1^0 \rightarrow \gamma s\overline{s}$	[z] $<$ 1		$\times 10^{-3}$	CL=90%	–	DESIG=130
Lepton Family number (*LF*) violating modes						NODE=M049;CLUMP=C
$\mu^\pm\tau^\mp$	*LF* $<$ 6.0		$\times 10^{-6}$	CL=95%	4563	DESIG=116
Other decays						NODE=M049;CLUMP=D
invisible	$<$ 3.0		$\times 10^{-4}$	CL=90%	–	DESIG=106

$\chi_{b0}(1P)$ [aa]

$I^G(J^{PC}) = 0^+(0^{++})$
J needs confirmation. NODE=M076

Mass $m = 9859.44 \pm 0.42 \pm 0.31$ MeV NODE=M076M;DTYPE=M;OUR EVAL; → UNCHECKED ←

$\chi_{b0}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$\gamma\,\Upsilon(1S)$	(1.94±0.27) %		391	NODE=M076215;DESIG=1
$D^0\,X$	< 10.4 %	90%	–	DESIG=2
$\pi^+\pi^-K^+K^-\pi^0$	< 1.6 $\times 10^{-4}$	90%	4875	DESIG=3
$2\pi^+\pi^-K^-K^0_S$	< 5 $\times 10^{-5}$	90%	4875	DESIG=4
$2\pi^+\pi^-K^-K^0_S2\pi^0$	< 5 $\times 10^{-4}$	90%	4846	DESIG=5
$2\pi^+2\pi^-2\pi^0$	< 2.1 $\times 10^{-4}$	90%	4905	DESIG=6
$2\pi^+2\pi^-K^+K^-$	(1.1 ±0.6) $\times 10^{-4}$		4861	DESIG=7
$2\pi^+2\pi^-K^+K^-\pi^0$	< 2.7 $\times 10^{-4}$	90%	4846	DESIG=8
$2\pi^+2\pi^-K^+K^-2\pi^0$	< 5 $\times 10^{-4}$	90%	4828	DESIG=9
$3\pi^+2\pi^-K^-K^0_S\pi^0$	< 1.6 $\times 10^{-4}$	90%	4827	DESIG=10
$3\pi^+3\pi^-$	< 8 $\times 10^{-5}$	90%	4904	DESIG=11
$3\pi^+3\pi^-2\pi^0$	< 6 $\times 10^{-4}$	90%	4881	DESIG=12
$3\pi^+3\pi^-K^+K^-$	(2.4 ±1.2) $\times 10^{-4}$		4827	DESIG=13
$3\pi^+3\pi^-K^+K^-\pi^0$	< 1.0 $\times 10^{-3}$	90%	4808	DESIG=14
$4\pi^+4\pi^-$	< 8 $\times 10^{-5}$	90%	4880	DESIG=15
$4\pi^+4\pi^-2\pi^0$	< 2.1 $\times 10^{-3}$	90%	4850	DESIG=16
$J/\psi\,J/\psi$	< 7 $\times 10^{-5}$	90%	3836	DESIG=17
$J/\psi\,\psi(2S)$	< 1.2 $\times 10^{-4}$	90%	3571	DESIG=18
$\psi(2S)\,\psi(2S)$	< 3.1 $\times 10^{-5}$	90%	3273	DESIG=19
$J/\psi(1S)$ anything	< 2.3 $\times 10^{-3}$	90%	–	DESIG=20

$\chi_{b1}(1P)$ [aa]

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

NODE=M077

Mass m = 9892.78 ± 0.26 ± 0.31 MeV

NODE=M077M;DTYPE=M;OUR EVAL; → UNCHECKED ←

$\chi_{b1}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$\gamma\,\Upsilon(1S)$	(35.2 ±2.0) %		423	NODE=M077215;DESIG=1
$D^0\,X$	(12.6 ±2.2) %		–	DESIG=2
$\pi^+\pi^-K^+K^-\pi^0$	(2.0 ±0.6) $\times 10^{-4}$		4892	DESIG=3
$2\pi^+\pi^-K^-K^0_S$	(1.3 ±0.5) $\times 10^{-4}$		4892	DESIG=4
$2\pi^+\pi^-K^-K^0_S2\pi^0$	< 6 $\times 10^{-4}$	90%	4863	DESIG=5
$2\pi^+2\pi^-2\pi^0$	(8.0 ±2.5) $\times 10^{-4}$		4921	DESIG=6
$2\pi^+2\pi^-K^+K^-$	(1.5 ±0.5) $\times 10^{-4}$		4878	DESIG=7
$2\pi^+2\pi^-K^+K^-\pi^0$	(3.5 ±1.2) $\times 10^{-4}$		4863	DESIG=8
$2\pi^+2\pi^-K^+K^-2\pi^0$	(8.6 ±3.2) $\times 10^{-4}$		4845	DESIG=9
$3\pi^+2\pi^-K^-K^0_S\pi^0$	(9.3 ±3.3) $\times 10^{-4}$		4844	DESIG=10
$3\pi^+3\pi^-$	(1.9 ±0.6) $\times 10^{-4}$		4921	DESIG=11
$3\pi^+3\pi^-2\pi^0$	(1.7 ±0.5) $\times 10^{-3}$		4898	DESIG=12
$3\pi^+3\pi^-K^+K^-$	(2.6 ±0.8) $\times 10^{-4}$		4844	DESIG=13
$3\pi^+3\pi^-K^+K^-\pi^0$	(7.5 ±2.6) $\times 10^{-4}$		4825	DESIG=14
$4\pi^+4\pi^-$	(2.6 ±0.9) $\times 10^{-4}$		4897	DESIG=15
$4\pi^+4\pi^-2\pi^0$	(1.4 ±0.6) $\times 10^{-3}$		4867	DESIG=16
ω anything	(4.9 ±1.4) %		–	DESIG=21
$\omega\,X_{tetra}$	< 4.44 $\times 10^{-4}$	90%	–	DESIG=22
$J/\psi\,J/\psi$	< 2.7 $\times 10^{-5}$	90%	3857	DESIG=17
$J/\psi\,\psi(2S)$	< 1.7 $\times 10^{-5}$	90%	3594	DESIG=18
$\psi(2S)\,\psi(2S)$	< 6 $\times 10^{-5}$	90%	3298	DESIG=19
$J/\psi(1S)$ anything	< 1.1 $\times 10^{-3}$	90%	–	DESIG=20
$J/\psi(1S)\,X_{tetra}$	< 2.27 $\times 10^{-4}$	90%	–	DESIG=23

$h_b(1P)$

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

NODE=M204

Mass m = 9899.3 ± 0.8 MeV

NODE=M204M;DTYPE=M

$h_b(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\eta_b(1S)\gamma$	(52^{+6}_{-5}) %	488	NODE=M204215;DESIG=1

$\chi_{b2}(1P)$ [aa]

$I^G(J^{PC}) = 0^+(2^{++})$
J needs confirmation. NODE=M078

Mass $m = 9912.21 \pm 0.26 \pm 0.31$ MeV NODE=M078M;DTYPE=M;OUR EVAL;
→ UNCHECKED ←

$\chi_{b2}(1P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$\gamma\Upsilon(1S)$	(18.0 ± 1.0) %		442	NODE=M078215;DESIG=1
D^0X	< 7.9 %	90%	–	DESIG=2
$\pi^+\pi^-K^+K^-\pi^0$	$(8\pm5)\times10^{-5}$		4902	DESIG=3
$2\pi^+\pi^-K^-K^0_S$	$< 1.0\times10^{-4}$	90%	4901	DESIG=4
$2\pi^+\pi^-K^-K^0_S2\pi^0$	$(5.3\pm2.4)\times10^{-4}$		4873	DESIG=5
$2\pi^+2\pi^-2\pi^0$	$(3.5\pm1.4)\times10^{-4}$		4931	DESIG=6
$2\pi^+2\pi^-K^+K^-$	$(1.1\pm0.4)\times10^{-4}$		4888	DESIG=7
$2\pi^+2\pi^-K^+K^-\pi^0$	$(2.1\pm0.9)\times10^{-4}$		4872	DESIG=8
$2\pi^+2\pi^-K^+K^-2\pi^0$	$(3.9\pm1.8)\times10^{-4}$		4855	DESIG=9
$3\pi^+2\pi^-K^-K^0_S\pi^0$	$< 5\times10^{-4}$	90%	4854	DESIG=10
$3\pi^+3\pi^-$	$(7.0\pm3.1)\times10^{-5}$		4931	DESIG=11
$3\pi^+3\pi^-2\pi^0$	$(1.0\pm0.4)\times10^{-3}$		4908	DESIG=12
$3\pi^+3\pi^-K^+K^-$	$< 8\times10^{-5}$	90%	4854	DESIG=13
$3\pi^+3\pi^-K^+K^-\pi^0$	$(3.6\pm1.5)\times10^{-4}$		4835	DESIG=14
$4\pi^+4\pi^-$	$(8\pm4)\times10^{-5}$		4907	DESIG=15
$4\pi^+4\pi^-2\pi^0$	$(1.8\pm0.7)\times10^{-3}$		4877	DESIG=16
$J/\psi J/\psi$	$< 4\times10^{-5}$	90%	3869	DESIG=17
$J/\psi\psi(2S)$	$< 5\times10^{-5}$	90%	3608	DESIG=18
$\psi(2S)\psi(2S)$	$< 1.6\times10^{-5}$	90%	3313	DESIG=19
$J/\psi(1S)$anything	$(1.5\pm0.4)\times10^{-3}$		–	DESIG=20

$\Upsilon(2S)$

$I^G(J^{PC}) = 0^-(1^{--})$ NODE=M052

Mass $m = 10023.26 \pm 0.31$ MeV NODE=M052M;DTYPE=M
$m_{\Upsilon(3S)} - m_{\Upsilon(2S)} = 331.50 \pm 0.13$ MeV NODE=M052DM3;DTYPE=D
Full width $\Gamma = 31.98 \pm 2.63$ keV NODE=M052W;DTYPE=G;OUR EVAL;
→ UNCHECKED ←

$\Upsilon(2S)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$\Upsilon(1S)\pi^+\pi^-$	(17.85± 0.26) %		475	NODE=M052215;DESIG=4
$\Upsilon(1S)\pi^0\pi^0$	(8.6 ± 0.4) %		480	DESIG=5
$\tau^+\tau^-$	(2.00± 0.21) %		4686	DESIG=3
$\mu^+\mu^-$	(1.93± 0.17) %	S=2.2	5011	DESIG=1
e^+e^-	(1.91± 0.16) %		5012	DESIG=2
$\Upsilon(1S)\pi^0$	< 4 $\times 10^{-5}$	CL=90%	531	DESIG=10
$\Upsilon(1S)\eta$	(2.9 ± 0.4) $\times 10^{-4}$	S=2.0	126	DESIG=6
$J/\psi(1S)$ anything	< 6 $\times 10^{-3}$	CL=90%	4533	DESIG=20
$J/\psi(1S)\eta_c$	< 5.4 $\times 10^{-6}$	CL=90%	3984	DESIG=143
$J/\psi(1S)\chi_{c0}$	< 3.4 $\times 10^{-6}$	CL=90%	3808	DESIG=144
$J/\psi(1S)\chi_{c1}$	< 1.2 $\times 10^{-6}$	CL=90%	3765	DESIG=145
$J/\psi(1S)\chi_{c2}$	< 2.0 $\times 10^{-6}$	CL=90%	3744	DESIG=146
$J/\psi(1S)\eta_c(2S)$	< 2.5 $\times 10^{-6}$	CL=90%	3707	DESIG=147
$J/\psi(1S)X(3940)$	< 2.0 $\times 10^{-6}$	CL=90%	3555	DESIG=148
$J/\psi(1S)X(4160)$	< 2.0 $\times 10^{-6}$	CL=90%	3440	DESIG=149
χ_{c1} anything	(2.2 ± 0.5) $\times 10^{-4}$		–	DESIG=157
$\chi_{c1}(1P)^0 X_{tetra}$	< 3.67 $\times 10^{-5}$	CL=90%	–	DESIG=160
χ_{c2} anything	(2.3 ± 0.8) $\times 10^{-4}$		–	DESIG=158
$\psi(2S)\eta_c$	< 5.1 $\times 10^{-6}$	CL=90%	3732	DESIG=150
$\psi(2S)\chi_{c0}$	< 4.7 $\times 10^{-6}$	CL=90%	3536	DESIG=151
$\psi(2S)\chi_{c1}$	< 2.5 $\times 10^{-6}$	CL=90%	3488	DESIG=152
$\psi(2S)\chi_{c2}$	< 1.9 $\times 10^{-6}$	CL=90%	3464	DESIG=153
$\psi(2S)\eta_c(2S)$	< 3.3 $\times 10^{-6}$	CL=90%	3422	DESIG=154
$\psi(2S)X(3940)$	< 3.9 $\times 10^{-6}$	CL=90%	3250	DESIG=155
$\psi(2S)X(4160)$	< 3.9 $\times 10^{-6}$	CL=90%	3118	DESIG=156
$Z_c(3900)^+ Z_c(3900)^-$	< 1.0 $\times 10^{-6}$	CL=90%	–	DESIG=162
$Z_c(4200)^+ Z_c(4200)^-$	< 1.67 $\times 10^{-5}$	CL=90%	–	DESIG=163
$Z_c(3900)^\pm Z_c(4200)^\mp$	< 7.3 $\times 10^{-6}$	CL=90%	–	DESIG=164
$X(4050)^+ X(4050)^-$	< 1.35 $\times 10^{-5}$	CL=90%	–	DESIG=165
$X(4250)^+ X(4250)^-$	< 2.67 $\times 10^{-5}$	CL=90%	–	DESIG=166
$X(4050)^\pm X(4250)^\mp$	< 2.72 $\times 10^{-5}$	CL=90%	–	DESIG=167
$Z_c(4430)^+ Z_c(4430)^-$	< 2.03 $\times 10^{-5}$	CL=90%	–	DESIG=168
$X(4055)^\pm X(4055)^\mp$	< 1.11 $\times 10^{-5}$	CL=90%	–	DESIG=170
$X(4055)^\pm Z_c(4430)^\mp$	< 2.11 $\times 10^{-5}$	CL=90%	–	DESIG=171
$\overline{^2H}$ anything	($2.78^{+\ 0.30}_{-\ 0.26}$) $\times 10^{-5}$	S=1.2	–	DESIG=16
hadrons	(94 ±11) %		–	DESIG=101
ggg	(58.8 ± 1.2) %		–	DESIG=105
γgg	(1.87± 0.28) %		–	DESIG=106
$\phi K^+ K^-$	(1.6 ± 0.4) $\times 10^{-6}$		4910	DESIG=133
$\omega\pi^+\pi^-$	< 2.58 $\times 10^{-6}$	CL=90%	4977	DESIG=134
$K^*(892)^0 K^-\pi^+$ + c.c.	(2.3 ± 0.7) $\times 10^{-6}$		4952	DESIG=135
$\phi f_2'(1525)$	< 1.33 $\times 10^{-6}$	CL=90%	4842	DESIG=136
$\omega f_2(1270)$	< 5.7 $\times 10^{-7}$	CL=90%	4899	DESIG=137
$\rho(770) a_2(1320)$	< 8.8 $\times 10^{-7}$	CL=90%	4894	DESIG=138
$K^*(892)^0 \overline{K}_2^*(1430)^0$ + c.c.	(1.5 ± 0.6) $\times 10^{-6}$		4869	DESIG=139
$K_1(1270)^\pm K^\mp$	< 3.22 $\times 10^{-6}$	CL=90%	4921	DESIG=140
$K_1(1400)^\pm K^\mp$	< 8.3 $\times 10^{-7}$	CL=90%	4901	DESIG=141
$b_1(1235)^\pm \pi^\mp$	< 4.0 $\times 10^{-7}$	CL=90%	4935	DESIG=142
$\rho\pi$	< 1.16 $\times 10^{-6}$	CL=90%	4981	DESIG=126
$\pi^+\pi^-\pi^0$	< 8.0 $\times 10^{-7}$	CL=90%	5007	DESIG=127
$\omega\pi^0$	< 1.63 $\times 10^{-6}$	CL=90%	4980	DESIG=128
$\pi^+\pi^-\pi^0\pi^0$	(1.30± 0.28) $\times 10^{-5}$		5002	DESIG=129
$K_S^0 K^+\pi^-$ + c.c.	(1.14± 0.33) $\times 10^{-6}$		4979	DESIG=130
$K^*(892)^0 \overline{K}^0$ + c.c.	< 4.22 $\times 10^{-6}$	CL=90%	4959	DESIG=131
$K^*(892)^- K^+$ + c.c.	< 1.45 $\times 10^{-6}$	CL=90%	4960	DESIG=132
$f_1(1285)$ anything	(2.2 ± 1.6) $\times 10^{-3}$		–	DESIG=159
$f_1(1285) X_{tetra}$	< 6.47 $\times 10^{-5}$	CL=90%	–	DESIG=161
Sum of 100 exclusive modes	(2.90± 0.30) $\times 10^{-3}$		–	DESIG=121

Radiative decays

NODE=M052;CLUMP=A

$\gamma\chi_{b1}(1P)$	(6.9 ± 0.4) %			130	DESIG=8
$\gamma\chi_{b2}(1P)$	(7.15± 0.35) %			110	DESIG=7
$\gamma\chi_{b0}(1P)$	(3.8 ± 0.4) %			162	DESIG=9
$\gamma f_0(1710)$	< 5.9	$\times 10^{-4}$	CL=90%	4867	DESIG=13
$\gamma f_2'(1525)$	< 5.3	$\times 10^{-4}$	CL=90%	4897	DESIG=12
$\gamma f_2(1270)$	< 2.41	$\times 10^{-4}$	CL=90%	4930	DESIG=11
$\gamma\eta_c(1S)$	< 2.7	$\times 10^{-5}$	CL=90%	4567	DESIG=111
$\gamma\chi_{c0}$	< 1.0	$\times 10^{-4}$	CL=90%	4430	DESIG=112
$\gamma\chi_{c1}$	< 3.6	$\times 10^{-6}$	CL=90%	4397	DESIG=113
$\gamma\chi_{c2}$	< 1.5	$\times 10^{-5}$	CL=90%	4381	DESIG=114
$\gamma\chi_{c1}(3872)$	< 2.3	$\times 10^{-5}$	CL=90%	4264	DESIG=172
$\gamma\chi_{c1}(3872)$, $\chi_{c1} \to \pi^+\pi^-\pi^0 J/\psi$	< 2.4	$\times 10^{-6}$	CL=90%	–	DESIG=116
$\gamma X(3915) \to \omega J/\psi$	< 2.8	$\times 10^{-6}$	CL=90%	–	DESIG=117
$\gamma\chi_{c1}(4140) \to \phi J/\psi$	< 1.2	$\times 10^{-6}$	CL=90%	–	DESIG=118
$\gamma X(4350) \to \phi J/\psi$	< 1.3	$\times 10^{-6}$	CL=90%	–	DESIG=119
$\gamma\eta_b(1S)$	$(5.5 \,^{+\,1.1}_{-\,0.9}) \times 10^{-4}$		S=1.2	605	DESIG=102
$\gamma\eta_b(1S) \to \gamma$Sum of 26 exclusive modes	< 3.7	$\times 10^{-6}$	CL=90%	–	DESIG=124
$\gamma X_{b\bar{b}} \to \gamma$Sum of 26 exclusive modes	< 4.9	$\times 10^{-6}$	CL=90%	–	DESIG=125
$\gamma X \to \gamma +\geq 4$ prongs [bb]	< 1.95	$\times 10^{-4}$	CL=95%	–	DESIG=103
$\gamma A^0 \to \gamma$hadrons	< 8	$\times 10^{-5}$	CL=90%	–	DESIG=108
$\gamma a_1^0 \to \gamma\mu^+\mu^-$	< 8.3	$\times 10^{-6}$	CL=90%	–	DESIG=123

Lepton Family number (*LF*) violating modes

NODE=M052;CLUMP=B

$e^\pm\tau^\mp$	*LF*	< 3.2	$\times 10^{-6}$	CL=90%	4854	DESIG=107
$\mu^\pm\tau^\mp$	*LF*	< 3.3	$\times 10^{-6}$	CL=90%	4854	DESIG=104

$\Upsilon_2(1D)$

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

NODE=M177

was $\Upsilon(1D)$

Mass $m = 10163.7 \pm 1.4$ MeV (S = 1.7)

NODE=M177M;DTYPE=M

$\Upsilon_2(1D)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\gamma\gamma\,\Upsilon(1S)$	seen	679	NODE=M177215;DESIG=1;OUR EVAL; → UNCHECKED ←
$\gamma\chi_{bJ}(1P)$	seen	300	DESIG=2;OUR EVAL;→ UNCHECKED ←
$\eta\,\Upsilon(1S)$	not seen	426	DESIG=3;OUR EVAL;→ UNCHECKED ←
$\pi^+\pi^-\,\Upsilon(1S)$	$(6.6\pm1.6)\times10^{-3}$	623	DESIG=4

$\chi_{b0}(2P)$ [aa]

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

J needs confirmation.

NODE=M079

Mass $m = 10232.5 \pm 0.4 \pm 0.5$ MeV

NODE=M079M;DTYPE=M;OUR EVAL; → UNCHECKED ←

$\chi_{b0}(2P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$\gamma\,\Upsilon(2S)$	(1.38 ± 0.30) %		207	NODE=M079215;DESIG=2
$\gamma\,\Upsilon(1S)$	$(3.8\ \pm1.7\ )\times10^{-3}$		743	DESIG=1
D^0X	<8.2 %	90%	–	DESIG=3
$\pi^+\pi^-K^+K^-\pi^0$	$<3.4\times10^{-5}$	90%	5064	DESIG=4
$2\pi^+\pi^-K^-K^0_S$	$<5\times10^{-5}$	90%	5063	DESIG=5
$2\pi^+\pi^-K^-K^0_S2\pi^0$	$<2.2\times10^{-4}$	90%	5036	DESIG=6
$2\pi^+2\pi^-2\pi^0$	$<2.4\times10^{-4}$	90%	5092	DESIG=7
$2\pi^+2\pi^-K^+K^-$	$<1.5\times10^{-4}$	90%	5050	DESIG=8
$2\pi^+2\pi^-K^+K^-\pi^0$	$<2.2\times10^{-4}$	90%	5035	DESIG=9
$2\pi^+2\pi^-K^+K^-2\pi^0$	$<1.1\times10^{-3}$	90%	5019	DESIG=10
$3\pi^+2\pi^-K^-K^0_S\pi^0$	$<7\times10^{-4}$	90%	5018	DESIG=11
$3\pi^+3\pi^-$	$<7\times10^{-5}$	90%	5091	DESIG=12
$3\pi^+3\pi^-2\pi^0$	$<1.2\times10^{-3}$	90%	5070	DESIG=13
$3\pi^+3\pi^-K^+K^-$	$<1.5\times10^{-4}$	90%	5017	DESIG=14
$3\pi^+3\pi^-K^+K^-\pi^0$	$<7\times10^{-4}$	90%	4999	DESIG=15
$4\pi^+4\pi^-$	$<1.7\times10^{-4}$	90%	5069	DESIG=16
$4\pi^+4\pi^-2\pi^0$	$<6\times10^{-4}$	90%	5039	DESIG=17

$\chi_{b1}(2P)$ [aa]

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

NODE=M080

Mass $m = 10255.46 \pm 0.22 \pm 0.50$ MeV
$m_{\chi_{b1}(2P)} - m_{\chi_{b0}(2P)} = 23.5 \pm 1.0$ MeV

NODE=M080M;DTYPE=M;OUR EVAL;
→ UNCHECKED ←
NODE=M080M2;DTYPE=D

$\chi_{b1}(2P)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\omega\,\Upsilon(1S)$	$(\ 1.63^{+0.40}_{-0.34})$ %	135	NODE=M080215;DESIG=3
$\gamma\,\Upsilon(2S)$	$(18.1\ \pm1.9\ )$ %	230	DESIG=2
$\gamma\,\Upsilon(1S)$	$(\ 9.9\ \pm1.0\ )$ %	764	DESIG=1
$\pi\pi\,\chi_{b1}(1P)$	$(\ 9.1\ \pm1.3\ )\times10^{-3}$	238	DESIG=4
D^0X	$(\ 8.8\ \pm1.7\ )$ %	–	DESIG=5
$\pi^+\pi^-K^+K^-\pi^0$	$(\ 3.1\ \pm1.0\ )\times10^{-4}$	5075	DESIG=6
$2\pi^+\pi^-K^-K^0_S$	$(\ 1.1\ \pm0.5\ )\times10^{-4}$	5075	DESIG=7
$2\pi^+\pi^-K^-K^0_S2\pi^0$	$(\ 7.7\ \pm3.2\ )\times10^{-4}$	5047	DESIG=8
$2\pi^+2\pi^-2\pi^0$	$(\ 5.9\ \pm2.0\ )\times10^{-4}$	5104	DESIG=9
$2\pi^+2\pi^-K^+K^-$	$(10\ \ \pm4\ \ )\times10^{-5}$	5062	DESIG=10
$2\pi^+2\pi^-K^+K^-\pi^0$	$(\ 5.5\ \pm1.8\ )\times10^{-4}$	5047	DESIG=11
$2\pi^+2\pi^-K^+K^-2\pi^0$	$(10\ \ \pm4\ \ )\times10^{-4}$	5030	DESIG=12
$3\pi^+2\pi^-K^-K^0_S\pi^0$	$(\ 6.7\ \pm2.6\ )\times10^{-4}$	5029	DESIG=13
$3\pi^+3\pi^-$	$(\ 1.2\ \pm0.4\ )\times10^{-4}$	5103	DESIG=14
$3\pi^+3\pi^-2\pi^0$	$(\ 1.2\ \pm0.4\ )\times10^{-3}$	5081	DESIG=15
$3\pi^+3\pi^-K^+K^-$	$(\ 2.0\ \pm0.8\ )\times10^{-4}$	5029	DESIG=16
$3\pi^+3\pi^-K^+K^-\pi^0$	$(\ 6.1\ \pm2.2\ )\times10^{-4}$	5011	DESIG=17
$4\pi^+4\pi^-$	$(\ 1.7\ \pm0.6\ )\times10^{-4}$	5080	DESIG=18
$4\pi^+4\pi^-2\pi^0$	$(\ 1.9\ \pm0.7\ )\times10^{-3}$	5051	DESIG=19

$\chi_{b2}(2P)$ [aa]

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

NODE=M081

Mass $m = 10268.65 \pm 0.22 \pm 0.50$ MeV
$m_{\chi_{b2}(2P)} - m_{\chi_{b1}(2P)} = 13.10 \pm 0.24$ MeV

NODE=M081M;DTYPE=M;OUR EVAL;
→ UNCHECKED ←
NODE=M081M2;DTYPE=D

$\chi_{b2}(2P)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$\omega\,\Upsilon(1S)$	$(1.10^{+0.34}_{-0.30})$ %		194	NODE=M081215;DESIG=3
$\gamma\,\Upsilon(2S)$	(8.9 ±1.2) %		242	DESIG=2
$\gamma\,\Upsilon(1S)$	(6.6 ±0.8) %		777	DESIG=1
$\pi\pi\chi_{b2}(1P)$	(5.1 ±0.9) $\times 10^{-3}$		229	DESIG=4
D^0X	< 2.4 %	90%	–	DESIG=5
$\pi^+\pi^-K^+K^-\pi^0$	< 1.1 $\times 10^{-4}$	90%	5082	DESIG=6
$2\pi^+\pi^-K^-K^0_S$	< 9 $\times 10^{-5}$	90%	5082	DESIG=7
$2\pi^+\pi^-K^-K^0_S2\pi^0$	< 7 $\times 10^{-4}$	90%	5054	DESIG=8
$2\pi^+2\pi^-2\pi^0$	(3.9 ±1.6) $\times 10^{-4}$		5110	DESIG=9
$2\pi^+2\pi^-K^+K^-$	(9 ±4) $\times 10^{-5}$		5068	DESIG=10
$2\pi^+2\pi^-K^+K^-\pi^0$	(2.4 ±1.1) $\times 10^{-4}$		5054	DESIG=11
$2\pi^+2\pi^-K^+K^-2\pi^0$	(4.7 ±2.3) $\times 10^{-4}$		5037	DESIG=12
$3\pi^+2\pi^-K^-K^0_S\pi^0$	< 4 $\times 10^{-4}$	90%	5036	DESIG=13
$3\pi^+3\pi^-$	(9 ±4) $\times 10^{-5}$		5110	DESIG=14
$3\pi^+3\pi^-2\pi^0$	(1.2 ±0.4) $\times 10^{-3}$		5088	DESIG=15
$3\pi^+3\pi^-K^+K^-$	(1.4 ±0.7) $\times 10^{-4}$		5036	DESIG=16
$3\pi^+3\pi^-K^+K^-\pi^0$	(4.2 ±1.7) $\times 10^{-4}$		5017	DESIG=17
$4\pi^+4\pi^-$	(9 ±5) $\times 10^{-5}$		5087	DESIG=18
$4\pi^+4\pi^-2\pi^0$	(1.3 ±0.5) $\times 10^{-3}$		5058	DESIG=19

$\Upsilon(3S)$

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

NODE=M048

Mass $m = 10355.2 \pm 0.5$ MeV
NODE=M048M;DTYPE=M

$m_{\Upsilon(3S)} - m_{\Upsilon(2S)} = 331.50 \pm 0.13$ MeV
NODE=M048DM2;DTYPE=D

Full width $\Gamma = 20.32 \pm 1.85$ keV
NODE=M048W;DTYPE=G;OUR EVAL; → UNCHECKED ←

$\Upsilon(3S)$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
$\Upsilon(2S)$ anything	(10.6 ± 0.8) %		296	NODE=M048215;DESIG=8
$\Upsilon(2S)\pi^+\pi^-$	(2.82± 0.18) %	S=1.6	177	DESIG=4
$\Upsilon(2S)\pi^0\pi^0$	(1.85± 0.14) %		190	DESIG=10
$\Upsilon(2S)\gamma\gamma$	(5.0 ± 0.7) %		327	DESIG=12
$\Upsilon(2S)\pi^0$	< 5.1 $\times 10^{-4}$	CL=90%	298	DESIG=107
$\Upsilon(1S)\pi^+\pi^-$	(4.37± 0.08) %		813	DESIG=3
$\Upsilon(1S)\pi^0\pi^0$	(2.20± 0.13) %		816	DESIG=11
$\Upsilon(1S)\eta$	< 1 $\times 10^{-4}$	CL=90%	677	DESIG=9
$\Upsilon(1S)\pi^0$	< 7 $\times 10^{-5}$	CL=90%	846	DESIG=106
$h_b(1P)\pi^0$	< 1.2 $\times 10^{-3}$	CL=90%	426	DESIG=112
$h_b(1P)\pi^0 \to \gamma\eta_b(1S)\pi^0$	(4.3 ± 1.4) $\times 10^{-4}$		–	DESIG=113
$h_b(1P)\pi^+\pi^-$	< 1.2 $\times 10^{-4}$	CL=90%	353	DESIG=114
$\tau^+\tau^-$	(2.29± 0.30) %		4863	DESIG=16
$\mu^+\mu^-$	(2.18± 0.21) %	S=2.1	5177	DESIG=1
e^+e^-	(2.18± 0.20) %		5178	DESIG=2
hadrons	(93 ±12) %		–	DESIG=101
ggg	(35.7 ± 2.6) %		–	DESIG=109
γgg	(9.7 ± 1.8) $\times 10^{-3}$		–	DESIG=110
^2H anything	(2.33± 0.33) $\times 10^{-5}$		–	DESIG=117
Radiative decays				NODE=M048;CLUMP=B
$\gamma\chi_{b2}(2P)$	(13.1 ± 1.6) %	S=3.4	86	DESIG=5
$\gamma\chi_{b1}(2P)$	(12.6 ± 1.2) %	S=2.4	99	DESIG=6
$\gamma\chi_{b0}(2P)$	(5.9 ± 0.6) %	S=1.4	122	DESIG=7
$\gamma\chi_{b2}(1P)$	(10.0 ± 1.0) $\times 10^{-3}$	S=1.7	434	DESIG=103
$\gamma\chi_{b1}(1P)$	(9 ± 5) $\times 10^{-4}$	S=1.8	452	DESIG=104
$\gamma\chi_{b0}(1P)$	(2.7 ± 0.4) $\times 10^{-3}$		484	DESIG=13
$\gamma\eta_b(2S)$	< 6.2 $\times 10^{-4}$	CL=90%	350	DESIG=14
$\gamma\eta_b(1S)$	(5.1 ± 0.7) $\times 10^{-4}$		912	DESIG=15
$\gamma A^0 \to \gamma$ hadrons	< 8 $\times 10^{-5}$	CL=90%	–	DESIG=115
$\gamma X \to \gamma + \geq 4$ prongs	[cc] < 2.2 $\times 10^{-4}$	CL=95%	–	DESIG=102
$\gamma a_1^0 \to \gamma\mu^+\mu^-$	< 5.5 $\times 10^{-6}$	CL=90%	–	DESIG=116
$\gamma a_1^0 \to \gamma\tau^+\tau^-$	[dd] < 1.6 $\times 10^{-4}$	CL=90%	–	DESIG=108

Lepton Family number (*LF*) violating modes

$e^{\pm}\tau^{\mp}$	*LF*	< 4.2	$\times 10^{-6}$	CL=90%	5025	NODE=M048;CLUMP=C DESIG=111
$\mu^{\pm}\tau^{\mp}$	*LF*	< 3.1	$\times 10^{-6}$	CL=90%	5025	DESIG=105

$\chi_{b1}(3P)$

$I^G(J^{PC}) = 0^+(1^{++})$ NODE=M206

Mass $m = 10513.4 \pm 0.7$ MeV NODE=M206M;DTYPE=M

$\chi_{b1}(3P)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Upsilon(1S)\gamma$	seen	1000	NODE=M206215;DESIG=1
$\Upsilon(2S)\gamma$	seen	479	DESIG=2
$\Upsilon(3S)\gamma$	seen	157	DESIG=3

$\chi_{b2}(3P)$

$I^G(J^{PC}) = 0^+(2^{++})$ NODE=M238

Mass $m = 10524.0 \pm 0.8$ MeV NODE=M238M;DTYPE=M

$\chi_{b2}(3P)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Upsilon(3S)\gamma$	seen	167	NODE=M238215;DESIG=1

$\Upsilon(4S)$

$I^G(J^{PC}) = 0^-(1^{--})$ NODE=M047

also known as $\Upsilon(10580)$

Mass $m = 10579.4 \pm 1.2$ MeV NODE=M047M;DTYPE=M

Full width $\Gamma = 20.5 \pm 2.5$ MeV NODE=M047W;DTYPE=G

$\Upsilon(4S)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$B\overline{B}$	> 96 %	95%	326	NODE=M047215;DESIG=8;OUR EST; → UNCHECKED ←
B^+B^-	(51.4 ±0.6) %		331	DESIG=10
D_s^+ anything + c.c.	(17.8 ±2.6) %		–	DESIG=12
$B^0\overline{B}^0$	(48.6 ±0.6) %		326	DESIG=11
$J/\psi K_S^0 + (J/\psi,\ \eta_c)K_S^0$	< 4 $\times 10^{-7}$	90%	–	DESIG=15
non-$B\overline{B}$	< 4 %	95%	–	DESIG=6
e^+e^-	(1.57±0.08) $\times 10^{-5}$		5290	DESIG=1
$\rho^+\rho^-$	< 5.7 $\times 10^{-6}$	90%	5233	DESIG=16
$K^*(892)^0\overline{K}^0$	< 2.0 $\times 10^{-6}$	90%	5240	DESIG=22
$J/\psi(1S)$ anything	< 1.9 $\times 10^{-4}$	95%	–	DESIG=2
D^{*+} anything + c.c.	< 7.4 %	90%	5099	DESIG=3
ϕ anything	(7.1 ±0.6) %		5240	DESIG=4
$\phi\eta$	< 1.8 $\times 10^{-6}$	90%	5226	DESIG=13
$\phi\eta'$	< 4.3 $\times 10^{-6}$	90%	5196	DESIG=18
$\rho\eta$	< 1.3 $\times 10^{-6}$	90%	5247	DESIG=19
$\rho\eta'$	< 2.5 $\times 10^{-6}$	90%	5217	DESIG=20
$\Upsilon(1S)$ anything	< 4 $\times 10^{-3}$	90%	1053	DESIG=5
$\Upsilon(1S)\pi^+\pi^-$	(8.2 ±0.4) $\times 10^{-5}$		1026	DESIG=7
$\Upsilon(1S)\eta$	(1.81±0.18) $\times 10^{-4}$		924	DESIG=17
$\Upsilon(1S)\eta'$	(3.4 ±0.9) $\times 10^{-5}$		–	DESIG=26
$\Upsilon(2S)\pi^+\pi^-$	(8.2 ±0.8) $\times 10^{-5}$		468	DESIG=9
$h_b(1P)\pi^+\pi^-$	not seen		600	DESIG=21
$h_b(1P)\eta$	(2.18±0.21) $\times 10^{-3}$		390	DESIG=23
$\eta_b(1S)\omega$	< 1.8 $\times 10^{-4}$	90%	–	DESIG=27
^2H anything	< 1.3 $\times 10^{-5}$	90%	–	DESIG=14
Double Radiative Decays				NODE=M047;CLUMP=B
$\gamma\gamma\,\Upsilon(\mathrm{D}) \to \gamma\gamma\eta\,\Upsilon(1S)$	< 2.3 $\times 10^{-5}$	90%	–	DESIG=24

$Z_b(10610)$

$I^G(J^{PC}) = 1^+(1^{+-})$ NODE=M207

was $X(10610)$

Mass $m = 10607.2 \pm 2.0$ MeV NODE=M207M;DTYPE=M

Full width $\Gamma = 18.4 \pm 2.4$ MeV NODE=M207W;DTYPE=G

$Z_b(10610)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Upsilon(1S)\pi^+$	$(5.4^{+1.9}_{-1.5}) \times 10^{-3}$	1077	NODE=M207215;DESIG=1
$\Upsilon(1S)\pi^0$	not seen	1077	DESIG=9
$\Upsilon(2S)\pi^+$	$(3.6^{+1.1}_{-0.8})$ %	551	DESIG=2
$\Upsilon(2S)\pi^0$	seen	552	DESIG=10
$\Upsilon(3S)\pi^+$	$(2.1^{+0.8}_{-0.6})$ %	207	DESIG=3
$\Upsilon(3S)\pi^0$	seen	210	DESIG=11
$h_b(1P)\pi^+$	$(3.5^{+1.2}_{-0.9})$ %	671	DESIG=4
$h_b(2P)\pi^+$	$(4.7^{+1.7}_{-1.3})$ %	313	DESIG=5
$B^+\overline{B}^0$	not seen	505	DESIG=8
$B^+\overline{B}^{*0} + B^{*+}\overline{B}^0$	$(85.6^{+2.1}_{-2.9})$ %	–	DESIG=6

$Z_b(10650)$

$I^G(J^{PC}) = 1^+(1^{+-})$
I, G, C need confirmation.

NODE=M208

was $X(10650)^\pm$

Mass $m = 10652.2 \pm 1.5$ MeV
Full width $\Gamma = 11.5 \pm 2.2$ MeV

NODE=M208M;DTYPE=M
NODE=M208W;DTYPE=G

$Z_b(10650)^-$ decay modes are charge conjugates of the modes below.

NODE=M208215;NODE=M208

$Z_b(10650)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Upsilon(1S)\pi^+$	$(1.7^{+0.8}_{-0.6}) \times 10^{-3}$	1117	DESIG=1
$\Upsilon(2S)\pi^+$	$(1.4^{+0.6}_{-0.4})$ %	595	DESIG=2
$\Upsilon(3S)\pi^+$	$(1.6^{+0.7}_{-0.5})$ %	259	DESIG=3
$h_b(1P)\pi^+$	$(8.4^{+2.9}_{-2.4})$ %	714	DESIG=4
$h_b(2P)\pi^+$	(15 $\pm$4) %	360	DESIG=5
$B^+\overline{B}^0$	not seen	703	DESIG=8
$B^+\overline{B}^{*0} + B^{*+}\overline{B}^0$	not seen	–	DESIG=6
$B^{*+}\overline{B}^{*0}$	(74 $^{+4}_{-6}$) %	122	DESIG=7

$\Upsilon(10860)$

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

NODE=M092

Mass $m = 10885.2^{+2.6}_{-1.6}$ MeV
Full width $\Gamma = 37 \pm 4$ MeV

NODE=M092M;DTYPE=M
NODE=M092W;DTYPE=G

$\Upsilon(10860)$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$B\overline{B}X$	(76.2 $^{+2.7}_{-4.0}$) %		–	NODE=M092215;DESIG=9
$B\overline{B}$	(5.5 ±1.0) %		1322	DESIG=2
$B\overline{B}^* +$ c.c.	(13.7 ±1.6) %		–	DESIG=3
$B^*\overline{B}^*$	(38.1 ±3.4) %		1127	DESIG=4
$B\overline{B}^{(*)}\pi$	< 19.7 %	90%	1015	DESIG=10
$B\overline{B}\pi$	(0.0 ±1.2) %		1015	DESIG=23
$B^*\overline{B}\pi + B\overline{B}^*\pi$	(7.3 ±2.3) %		–	DESIG=24
$B^*\overline{B}^*\pi$	(1.0 ±1.4) %		739	DESIG=25
$B\overline{B}\pi\pi$	< 8.9 %	90%	551	DESIG=11
$B_s^{(*)}\overline{B}_s^{(*)}$	(20.1 ±3.1) %		905	DESIG=16
$B_s\overline{B}_s$	(5 ±5) $\times 10^{-3}$		905	DESIG=5
$B_s\overline{B}_s^* +$ c.c.	(1.35±0.32) %		–	DESIG=7
$B_s^*\overline{B}_s^*$	(17.6 ±2.7) %		543	DESIG=8
no open-bottom	(3.8 $^{+5.0}_{-0.5}$) %		–	DESIG=28
e^+e^-	(8.3 ±2.1) $\times 10^{-6}$		5443	DESIG=1
$K^*(892)^0\overline{K}^0$	< 1.0 $\times 10^{-5}$	90%	5395	DESIG=29
$\Upsilon(1S)\pi^+\pi^-$	(5.3 ±0.6) $\times 10^{-3}$		1306	DESIG=17
$\Upsilon(2S)\pi^+\pi^-$	(7.8 ±1.3) $\times 10^{-3}$		783	DESIG=18
$\Upsilon(3S)\pi^+\pi^-$	(4.8 $^{+1.9}_{-1.7}$) $\times 10^{-3}$		440	DESIG=19
$\Upsilon(1S)K^+K^-$	(6.1 ±1.8) $\times 10^{-4}$		959	DESIG=20
$\eta\,\Upsilon_J(1D)$	(4.8 ±1.1) $\times 10^{-3}$		–	DESIG=40
$h_b(1P)\pi^+\pi^-$	(3.5 $^{+1.0}_{-1.3}$) $\times 10^{-3}$		903	DESIG=26
$h_b(2P)\pi^+\pi^-$	(5.7 $^{+1.7}_{-2.1}$) $\times 10^{-3}$		544	DESIG=27
$\chi_{bJ}(1P)\pi^+\pi^-\pi^0$	(2.5 ±2.3) $\times 10^{-3}$		894	DESIG=41
$\chi_{b0}(1P)\pi^+\pi^-\pi^0$	< 6.3 $\times 10^{-3}$	90%	894	DESIG=30
$\chi_{b0}(1P)\omega$	< 3.9 $\times 10^{-3}$	90%	631	DESIG=31
$\chi_{b0}(1P)(\pi^+\pi^-\pi^0)_{\text{non}-\omega}$	< 4.8 $\times 10^{-3}$	90%	–	DESIG=32
$\chi_{b1}(1P)\pi^+\pi^-\pi^0$	(1.85±0.33) $\times 10^{-3}$		861	DESIG=33
$\chi_{b1}(1P)\omega$	(1.57±0.30) $\times 10^{-3}$		582	DESIG=34
$\chi_{b1}(1P)(\pi^+\pi^-\pi^0)_{\text{non}-\omega}$	(5.2 ±1.9) $\times 10^{-4}$		–	DESIG=35
$\chi_{b2}(1P)\pi^+\pi^-\pi^0$	(1.17±0.30) $\times 10^{-3}$		841	DESIG=36
$\chi_{b2}(1P)\omega$	(6.0 ±2.7) $\times 10^{-4}$		552	DESIG=37
$\chi_{b2}(1P)(\pi^+\pi^-\pi^0)_{\text{non}-\omega}$	(6 ±4) $\times 10^{-4}$		–	DESIG=38
$\gamma X_b \to \gamma\,\Upsilon(1S)\omega$	< 3.8 $\times 10^{-5}$	90%	–	DESIG=39
$\eta_b(1S)\omega$	< 1.3 $\times 10^{-3}$	90%	1177	DESIG=42
$\eta_b(2S)\omega$	< 5.6 $\times 10^{-3}$	90%	399	DESIG=43

Inclusive Decays. NODE=M092;CLUMP=I

These decay modes are submodes of one or more of the decay modes above. NODE=M092

ϕ anything	(13.8 $^{+2.4}_{-1.7}$) %		–	DESIG=12
D^0 anything + c.c.	(108 ±8) %		–	DESIG=13
D_s anything + c.c.	(46 ±6) %		–	DESIG=6
J/ψ anything	(2.06±0.21) %		–	DESIG=14
B^0 anything + c.c.	(77 ±8) %		–	DESIG=21
B^+ anything + c.c.	(72 ±6) %		–	DESIG=22

$\Upsilon(11020)$

$I^G(J^{PC}) = 0^-(1^{--})$ NODE=M093

Mass $m = 11000 \pm 4$ MeV NODE=M093M;DTYPE=M

Full width $\Gamma = 24^{+8}_{-6}$ MeV NODE=M093W;DTYPE=G

$\Upsilon(11020)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
e^+e^-	$(5.4^{+1.9}_{-2.1})\times10^{-6}$	5500	NODE=M093215;DESIG=1
$\chi_{bJ}(1P)\pi^+\pi^-\pi^0$	$(9\ ^{+9}_{-8}\ )\times10^{-3}$	1007	DESIG=2
$\chi_{b1}(1P)\pi^+\pi^-\pi^0$	seen	975	DESIG=3
$\chi_{b2}(1P)\pi^+\pi^-\pi^0$	seen	956	DESIG=4

NOTES

[a] The $\omega\rho$ interference is then due to $\omega\rho$ mixing only, and is expected to be small. If $e\mu$ universality holds, $\Gamma(\rho^0 \to \mu^+\mu^-) = \Gamma(\rho^0 \to e^+e^-) \times 0.99785$. LINKAGE=MD2

[b] C parity forbids this to occur as a single-photon process. LINKAGE=CS

[c] See the "Note on $a_1(1260)$" in the $a_1(1260)$ Particle Listings in PDG 06, Journal of Physics **G33** 1 (2006). LINKAGE=NA1

[d] Our estimate. See the Particle Listings for details. LINKAGE=BH

[e] See also the $\omega(1650)$. LINKAGE=MDE

[f] See also the $\omega(1420)$. LINKAGE=MDF

[g] See the "Note on $f_0(1370)$" in the $f_0(1370)$ Particle Listings and in the 1994 edition. LINKAGE=NF0

[h] See the note in the $L(1770)$ Particle Listings in Reviews of Modern Physics **56** S1 (1984), p. S200. See also the "Note on $K_2(1770)$ and the $K_2(1820)$" in the $K_2(1770)$ Particle Listings . LINKAGE=MDB

[i] See the "Note on $K_2(1770)$ and the $K_2(1820)$" in the $K_2(1770)$ Particle Listings . LINKAGE=MBD

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

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

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

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

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

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

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

[r] $2m_\tau < \mathrm{M}(\tau^+\tau^-) < 9.2$ GeV LINKAGE=E49

[s] 2 GeV $< m_{K^+K^-} <$ 3 GeV LINKAGE=G49

[t] X = scalar with $m < 8.0$ GeV LINKAGE=A49

[u] $X\overline{X}$ = vectors with $m < 3.1$ GeV LINKAGE=B49

[v] X and $\overline{X}$ = zero spin with $m < 4.5$ GeV LINKAGE=F49

[x] 1.5 GeV $< m_X <$ 5.0 GeV LINKAGE=C49

[y] 201 MeV $< \mathrm{M}(\mu^+\mu^-) <$ 3565 MeV LINKAGE=D49

[z] 0.5 GeV $< m_X <$ 9.0 GeV, where m_X is the invariant mass of the hadronic final state. LINKAGE=I49

[aa] Spectroscopic labeling for these states is theoretical, pending experimental information. LINKAGE=MJ

[bb] 1.5 GeV $< m_X <$ 5.0 GeV LINKAGE=C52

[cc] 1.5 GeV $< m_X <$ 5.0 GeV LINKAGE=C48

[dd] For $m_{\tau^+\tau^-}$ in the ranges 4.03–9.52 and 9.61–10.10 GeV. LINKAGE=MRG