Further States

OMITTED FROM SUMMARY TABLE

This section contains states observed by a single group or states poorly established that thus need confirmation.

QUANTUM NUMBERS, MASSES, WIDTHS, AND BRANCHING RATIOS

$X(360)$ $I^G(J^{PC}) = ?^?(?^{?+})$

MASS (MeV)	*WIDTH* (MeV)	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
$360 \pm 7 \pm 9$	64 ± 18	2.3k	[1] ABRAAMYAN 09	CNTR	2.75 $dC \to \gamma\gamma X$

[1] Not seen in $pC \to \gamma\gamma X$ at 5.5 GeV/c.

$X(1070)$ $I^G(J^{PC}) = ?^?(0^{++})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*	*COMMENT*
1072 ± 1	3.5 ± 0.5	[1] VLADIMIRSK...08	40 $\pi^- p \to K^0_S K^0_S n + \mathrm{m}\pi^0$

[1] Supersedes GRIGOR'EV 05.

$X(1110)$ $I^G(J^{PC}) = 0^+(\text{even}^{++})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*	*TECN*	*COMMENT*
1107 ± 4	$111 \pm 8 \pm 15$	DAFTARI 87	DBC	0. $\overline{p} n \to \rho^- \pi^+ \pi^-$

$f_0(1200\text{–}1600)$ $I^G(J^{PC}) = 0^+(0^{++})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*	*TECN*	*COMMENT*
1323 ± 8	237 ± 20	VLADIMIRSK...06	SPEC	40 $\pi^- p \to K^0_S K^0_S n$
1480^{+100}_{-150}	1030^{+80}_{-170}	[1] ANISOVICH 03	SPEC	
1530^{+90}_{-250}	560 ± 40	[2] ANISOVICH 03	SPEC	

[1] K-matrix pole from combined analysis of $\pi^- p \to \pi^0 \pi^0 n$, $\pi^- p \to K\overline{K} n$, $\pi^+\pi^- \to \pi^+\pi^-$, $\overline{p}p \to \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$, $\pi^+\pi^-\pi^0$, $K^+K^-\pi^0$, $K^0_S K^0_S \pi^0$, $K^+ K^0_S \pi^-$ at rest, $\overline{p}n \to \pi^-\pi^-\pi^+$, $K^0_S K^- \pi^0$, $K^0_S K^0_S \pi^-$ at rest.

[2] K-matrix pole from combined analysis of $\pi^- p \to \pi^0\pi^0 n$, $\pi^- p \to K\overline{K} n$, $\overline{p}p \to \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$ at rest.

$X(1420)$ $I^G(J^{PC}) = 2^+(0^{++})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*	*TECN*	*COMMENT*
1420 ± 20	160 ± 10	FILIPPI 00	OBLX	0 $\overline{n} p \to \pi^+\pi^+\pi^-$

$X(1545)$ $I^G(J^{PC}) = ?^?(?^{++})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*	*COMMENT*
1545 ± 3	6.0 ± 2.5	[1] VLADIMIRSK...08	40 $\pi^- p \to K^0_S K^0_S n + \mathrm{m}\pi^0$

[1] Supersedes VLADIMIRSKII 00.

X(1575) $I^G(J^{PC}) = ?^?(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
$1576^{+49}_{-55}{}^{+98}_{-91}$	$818^{+22}_{-23}{}^{+64}_{-133}$	[1] ABLIKIM	06S	BES	$J/\psi \to K^+ K^- \pi^0$

[1] A broad peak observed at $K^+ K^-$ invariant mass. Mass and width above are its pole position. The observed branching ratio is B($J/\psi \to X \pi^0$) B($X \to K^+ K^-$) = $(8.5 \pm 0.6^{+2.7}_{-3.6}) \times 10^{-4}$.

X(1600) $I^G(J^{PC}) = 2^+(2^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1600 ± 100	400 ± 200	[1] ALBRECHT	91F	ARG	10.2 $e^+ e^- \to e^+ e^- 2(\pi^+ \pi^-)$

[1] Our estimate.

X(1650) $I^G(J^{PC}) = 0^-(?^{?-})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1652 ± 7	<50	100	PROKOSHKIN	96	GAM2	32,38 $\pi p \to \omega \eta n$

X(1730) $I^G(J^{PC}) = ?^?(?^{?+})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
$1731.0 \pm 1.2 \pm 2.0$	$3.2 \pm 0.8 \pm 1.3$	58	VLADIMIRSK...07	SPEC	40 $\pi^- p \to K^0_S K^0_S X$

f_2(1750) $I^G(J^{PC}) = 0^+(2^{++})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1755 ± 10	67 ± 12	870	[1] SCHEGELSKY	06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$

$\Gamma(K\overline{K})$

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
17 ± 5	870	[2] SCHEGELSKY	06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$

$\Gamma(\gamma\gamma)$

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
0.13 ± 0.04	870	[2] SCHEGELSKY	06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$

$\Gamma(\pi\pi)$

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1.3 ± 1.0	870	[2] SCHEGELSKY	06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$

$\Gamma(\eta\eta)$

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
2.0 ± 0.5	870	[2] SCHEGELSKY	06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$

[1] From analysis of L3 data at 91 and 183–209 GeV.

[2] From analysis of L3 data at 91 and 183–209 GeV and using SU(3) relations.

X(1775) $I^G(J^{PC}) = 1^-(?^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1763±20	192 ± 60	CONDO	91	SHF	$\gamma p \to (p\pi^+)(\pi^+\pi^-\pi^-)$
1787±18	118 ± 60	CONDO	91	SHF	$\gamma p \to n\pi^+\pi^+\pi^-$

X(1850 - 3100) $I^G(J^{PC}) = ?^?(1^{--})$

$\Gamma(e^+e^-)\cdot B(X \to$ hadrons) (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<120	90	[1] ANASHIN	11	KEDR	$e^+e^- \to$ hadrons

[1] This limit is center-of-mass energy dependent. We quote the most stringent one.

X(1855) $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1856.6±5	20 ± 5	BRIDGES	86D	SPEC	0. $\overline{p}d \to \pi\pi N$

X(1870) $I^G(J^{PC}) = ?^?(2^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1870±40	250 ± 30	ALDE	86D	GAM4	100 $\pi^- p \to 2\eta X$

a_3(1875) $I^G(J^{PC}) = 1^-(3^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1874±43±96	385 ± 121 ± 114	CHUNG	02	B852	18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$

B(a_3(1875) → f_2(1270)π)/B(a_3(1875) → ρπ)

VALUE	DOCUMENT ID		TECN	COMMENT
0.8±0.2	[1] CHUNG	02	B852	18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$

[1] Using the observable fractions of 50.0% $\rho\pi$, 56.5% $f_2\pi$, and 11.8% $\rho_3\pi$.

B(a_3(1875) → ρ_3(1690)π)/B(a_3(1875) → ρπ)

VALUE	DOCUMENT ID		TECN	COMMENT
0.9±0.3	[1] CHUNG	02	B852	18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$

[1] Using the observable fractions of 50.0% $\rho\pi$, 56.5% $f_2\pi$, and 11.8% $\rho_3\pi$.

h_1(1900) $I^G(J^{PC}) = 0^-(1^{+-})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
$1908\pm6^{+8}_{-4}$	$175\pm13^{+7}_{-16}$	ABLIKIM	24CB	BES3	$J/\psi \to \phi\eta\pi^0$

$a_1(1930)$ $I^G(J^{PC}) = 1^-(1^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1930^{+30}_{-70}	155 ± 45	ANISOVICH	01F	SPEC	2.0 $\overline{p}p \to 3\pi^0, \pi^0\eta, \pi^0\eta'$

$X(1935)$ $I^G(J^{PC}) = 1^+(1^{-?})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1935 ± 20	215 ± 30	EVANGELIS...	79	OMEG	10,16 $\pi^- p \to \overline{p}pn$

$\rho_2(1940)$ $I^G(J^{PC}) = 1^+(2^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1940 ± 40	155 ± 40	[1] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \to \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$\omega_3(1945)$ $I^G(J^{PC}) = 0^-(3^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1945 ± 20	115 ± 22	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$a_2(1950)$ $I^G(J^{PC}) = 1^-(2^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1950^{+30}_{-70}	180^{+30}_{-70}	[1] ANISOVICH	01F	SPEC	1.96–2.41 $\overline{p}p$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99E, and ANISOVICH 01F.

$\omega(1960)$ $I^G(J^{PC}) = 0^-(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1960 ± 25	195 ± 60	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$b_1(1960)$ $I^G(J^{PC}) = 1^+(1^{+-})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1960 ± 35	230 ± 50	[1] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \to \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$h_1(1965)$ $I^G(J^{PC}) = 0^-(1^{+-})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1965 ± 45	345 ± 75	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$f_1(1970)$ $I^G(J^{PC}) = 0^+(1^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
1971 ± 15	240 ± 45	ANISOVICH	00J	SPEC

$X(1970)$ $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1970 ± 10	40 ± 20	CHLIAPNIK...	80	HBC	$32\ K^+ p \to 2K^0_S 2\pi X$

$X(1975)$ $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1973 ± 15	80	30	CASO	70	HBC	$11.2\ \pi^- p \to \rho 2\pi$

$\omega_2(1975)$ $I^G(J^{PC}) = 0^-(2^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
1975 ± 20	175 ± 25	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$a_2(1990)$ $I^G(J^{PC}) = 1^-(2^{++})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$2050 \pm 10 \pm 40$	$190 \pm 22 \pm 100$	18k	[1] SCHEGELSKY	06	RVUE	$\gamma\gamma \to \pi^+\pi^-\pi^0$
$2003 \pm 10 \pm 19$	$249 \pm 23 \pm 32$		LU	05	B852	$18\ \pi^- p \to \omega\pi^-\pi^0 p$

[1] From analysis of L3 data at 183–209 GeV.

$\Gamma(\gamma\gamma)\ \Gamma(\pi^+\pi^-\pi^0)\ /\ \Gamma(\text{total})$

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
$0.11 \pm 0.04 \pm 0.05$	18k	[1] SCHEGELSKY	06	RVUE	$\gamma\gamma \to \pi^+\pi^-\pi^0$

[1] From analysis of L3 data at 183–209 GeV.

$\rho(2000)$ $I^G(J^{PC}) = 1^+(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2000 ± 30	260 ± 45	[1] BUGG	04C	RVUE	Compilation
~ 1988	~ 244	HASAN	94	RVUE	$\overline{p}p \to \pi\pi$

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$f_2(2000)$ $I^G(J^{PC}) = 0^+(2^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2001 ± 10	312 ± 32	ANISOVICH	00J	SPEC	
~ 1996	~ 134	HASAN	94	RVUE	$\overline{p}p \to \pi\pi$

X(2000) $I^G(J^{PC}) = 1^-(?^{?+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
1964 ± 35	225 ± 50	[1] ARMSTRONG	93D	E760		$\overline{p}p \to 3\pi^0 \to 6\gamma$
~ 2100	~ 500	[1] ANTIPOV	77	CIBS	$-$	$25\ \pi^- p \to p\pi^-\rho_3$
2214 ± 15	355 ± 21	[2] BALTAY	77	HBC	0	$15\ \pi^- p \to \Delta^{++}3\pi$
2080 ± 40	340 ± 80	KALELKAR	75	HBC	$+$	$15\ \pi^+ p \to p\pi^+\rho_3$

[1] Cannot determine spin to be 3.
[2] BALTAY 77 favors $J^P = ,3^+$.

X(2000) $I^G(J^{PC}) = ?^?(4^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID	TECN	COMMENT
$1998\pm3\pm5$	<15	VLADIMIRSK...03	SPEC	$\pi^- p \to K^0_S K^0_S MM$

X(2000) $I^G(J^{PC}) = 0^-(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
$1992\pm12^{+15}_{-\ 6}$	$132 \pm 22^{+17}_{-\ 4}$	ABLIKIM	24CB	BES3	$J/\psi \to \phi\eta\pi^0$

η(2010) $I^G(J^{PC}) = 0^+(0^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2010^{+35}_{-60}	270 ± 60	ANISOVICH	00J	SPEC

π_1(2015) $I^G(J^{PC}) = 1^-(1^{-+})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$2014\pm20\pm16$	$230 \pm 32 \pm 73$	145k	LU	05	B852	$18\ \pi^- p \to \omega\pi^-\pi^0 p$
$2001\pm30\pm92$	$333 \pm 52 \pm 49$	69k	KUHN	04	B852	$18\ \pi^- p \to \eta\pi^+\pi^-\pi^- p$

a_0(2020) $I^G(J^{PC}) = 1^-(0^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2025 ± 30	330 ± 75	ANISOVICH	99C	SPEC

X(2020) $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2015 ± 3	10 ± 4	FERRER	99	RVUE	$\pi p \to p p \overline{p} \pi(\pi)$

h_3(2025) $I^G(J^{PC}) = 0^-(3^{+-})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2025 ± 20	145 ± 30	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$b_3(2030)$ $I^G(J^{PC}) = 1^+(3^{+-})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2032 ± 12	117 ± 11	[1] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0$, $\omega\eta\pi^0$, $\pi^+\pi^-$

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$a_2(2030)$ $I^G(J^{PC}) = 1^-(2^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2030 ± 20	205 ± 30	[1] ANISOVICH	01F	SPEC	1.96–2.41 $\overline{p}p$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99E, and ANISOVICH 01F.

$a_3(2030)$ $I^G(J^{PC}) = 1^-(3^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2031 ± 12	150 ± 18	[1] ANISOVICH	01F	SPEC	1.96–2.41 $\overline{p}p$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99E, and ANISOVICH 01F.

$\eta_2(2030)$ $I^G(J^{PC}) = 0^+(2^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
$2030 \pm 5 \pm 15$	$205 \pm 10 \pm 15$	ANISOVICH	00E	SPEC

$B(a_2\pi)_{L=0}/B(a_2\pi)_{L=2}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.05 ± 0.03	[1] ANISOVICH	11	SPEC	0.9–1.94 $p\overline{p}$

[1] Reanalysis of ADOMEIT 96 and ANISOVICH 00E.

$B(a_0\pi)/B(a_2\pi)_{L=2}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.10 ± 0.08	[1] ANISOVICH	11	SPEC	0.9–1.94 $p\overline{p}$

[1] Reanalysis of ADOMEIT 96 and ANISOVICH 00E.

$B(f_2\eta)/B(a_2\pi)_{L=2}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.13 ± 0.06	[1] ANISOVICH	11	SPEC	0.9–1.94 $p\overline{p}$

[1] Reanalysis of ADOMEIT 96 and ANISOVICH 00E.

$f_3(2050)$ $I^G(J^{PC}) = 0^+(3^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2048 ± 8	213 ± 34	ANISOVICH	00J	SPEC	2.0 $p\overline{p} \rightarrow \eta\pi^0\pi^0$

$f_0(2060)$ $I^G(J^{PC}) = 0^+(0^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
~ 2050	~ 120	[1] OAKDEN	94	RVUE	0.36–1.55 $\overline{p}p \rightarrow \pi\pi$
~ 2060	~ 50	[1] OAKDEN	94	RVUE	0.36–1.55 $\overline{p}p \rightarrow \pi\pi$

[1] See SEMENOV 99 and KLOET 96.

$\pi(2070)$ $I^G(J^{PC}) = 1^-(0^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2070 ± 35	310^{+100}_{-50}	ANISOVICH	01F	SPEC	2.0 $\overline{p}p \to 3\pi^0$, $\pi^0\eta$, $\pi^0\eta'$

$X(2080)$ $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2080 ± 10	110 ± 20	KREYMER	80	STRC	13 $\pi^- d \to p\overline{p}n(n_s)$

$X(2080)$ $I^G(J^{PC}) = ?^?(3^{-?})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2080 ± 10	190 ± 15	ROZANSKA	80	SPRK	18 $\pi^- p \to p\overline{p}n$

$K_1(2085)$ $I^G(J^{PC}) = ?^?(1^{+?})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
$2084^{+4}_{-2}\pm9$	$58^{+4}_{-3}\pm25$	[1,2] ABLIKIM	23BG	BES3	$e^+e^- \to pK^-\overline{\Lambda}$
$2075\pm12\pm5$	$90\pm35\pm9$	[3] ABLIKIM	04J	BES2	$J/\psi \to K^-p\overline{\Lambda}$

[1] The reported mass and width are the pole positions in the complex (M, Γ) plane.

[2] Signal observed with a statistical significance $>20\sigma$ comes from 3883 candidate events. Spin parity determined to be $J^P = 1^+$ with a statistical significance $>5\sigma$ over 0^-, 1^-, 2^+ hypotheses, and in the range within 3.1–7.5 σ with respect to 2^-.

[3] From a fit in the region $M_{p\overline{\Lambda}} - M_p - M_\Lambda < 150$ MeV. S-wave in the $p\overline{\Lambda}$ system preferred. A similar near-threshold enhancement in the $p\overline{\Lambda}$ system is observed in $B^+ \to p\overline{\Lambda}\overline{D}^0$ by CHEN 11F.

$a_1(2095)$ $I^G(J^{PC}) = 1^-(1^{++})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$2096\pm17\pm121$	$451\pm41\pm81$	69k	KUHN	04	B852	18 $\pi^- p \to \eta\pi^+\pi^-\pi^- p$

B($a_1(2095) \to f_1(1285)\pi$) / B($a_1(2095) \to a_1(1260)$)

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
3.18 ± 0.64	69k	KUHN	04	B852	18 $\pi^- p \to \eta\pi^+\pi^-\pi^- p$

$\eta(2100)$ $I^G(J^{PC}) = 0^+(0^{-+})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
2050^{+30+75}_{-24-26}	$250^{+36+181}_{-30-164}$		[1] ABLIKIM	16N	BES3	$J/\psi \to \gamma K^+ K^- K^+ K^-$
2103 ± 50	187 ± 75	586	[2] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$

[1] From a partial wave analysis of $J/\psi \to \gamma\phi\phi$, for which the primary signal is $\eta(2225) \to \phi\phi$, and that also finds significant signals for for 0^{-+} phase space, $f_0(2100)$, $f_2(2010)$,

$f_2(2300)$, $f_2(2340)$, and a previously unseen 0^{-+} state $X(2500)$ ($M = 2470^{+15}_{-19}{}^{+101}_{-23}$ MeV, $\Gamma = 230^{+64}_{-35}{}^{+56}_{-33}$ MeV).

[2] ASTON 81B sees no peak, has 850 events in Ajinenko+Barth bins. ARESTOV 80 sees no peak.

X(2100) $I^G(J^{PC}) = ?^?(0^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2100±40	250 ± 40	ALDE	86D	GAM4	100 $\pi^- p \to 2\eta X$

X(2110) $I^G(J^{PC}) = 1^+(3^{-?})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2110±10	330 ± 20	EVANGELIS...	79	OMEG	10,16 $\pi^- p \to \overline{p} p n$

X(2120) $I^G(J^{PC}) = ?^?(0^{??})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$2122.4\pm6.7^{+4.7}_{-2.7}$	$83\pm16^{+31}_{-11}$	647	ABLIKIM	11C	BES3	$J/\psi \to \gamma\pi^+\pi^-\eta'$

ω(2120) or φ(2120) $I^G(J^{PC}) = 0^-(?^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2119±11±15	69 ± 30 ± 5	[1] ABLIKIM	24AA	BES3	$e^+e^- \to \pi^+\pi^-\pi^0$

[1] From a fit with more than 5σ to the Born cross section line shapes of $e^+e^- \to \rho\pi$ and $e^+e^- \to \rho(1450)\pi$.

f_2(2140) $I^G(J^{PC}) = 0^+(2^{++})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
2141±12	49 ± 28	389	GREEN	86	MPSF	400 $pA \to 4KX$

X(2150) $I^G(J^{PC}) = ?^?(2^{+?})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2150±10	260 ± 10	ROZANSKA	80	SPRK	18 $\pi^- p \to p\overline{p}n$

a_2(2175) $I^G(J^{PC}) = 1^-(2^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2175±40	310^{+90}_{-45}	ANISOVICH	01F	SPEC	2.0 $\overline{p}p \to 3\pi^0, \pi^0\eta, \pi^0\eta'$

η(2190) $I^G(J^{PC}) = 0^+(0^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2190±50	850 ± 100	BUGG	99	BES

$\omega_2(2195)$ $\quad I^G(J^{PC}) = 0^-(2^{--})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2195 ± 30	225 ± 40	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$X(2210)$ $\quad I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2210^{+79}_{-21}	$203^{+437}_{-\ 87}$	EVANGELIS...	79B	OMEG	10 $\pi^- p \rightarrow K^+ K^- n$
2207 ± 22	130	CASO	70	HBC	11.2 $\pi^- p$

$X_2(2210)$ $\quad I^G(J^{PC}) = 0^+(2^{++})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2210 ± 60	360 ± 120	[1] KLEMPT	22	RVUE	$J/\psi \rightarrow \gamma\pi^0\pi^0$, $\gamma K^0_S K^0_S$

[1] Fit of the tensor partial waves from BES3 in the multipole basis. Might be a cluster of $J^{PC} = 2^{++}$ resonances. The ratio of decay widths $K K^- / \pi\pi$ is 0.23 ± 0.05.

$h_1(2215)$ $\quad I^G(J^{PC}) = 0^-(1^{+-})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2215 ± 40	325 ± 55	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$\rho_2(2225)$ $\quad I^G(J^{PC}) = 1^+(2^{--})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2225 ± 35	$335^{+100}_{-\ 50}$	[1] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0$, $\omega\eta\pi^0$, $\pi^+\pi^-$

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$\rho_4(2230)$ $\quad I^G(J^{PC}) = 1^+(4^{--})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2230 ± 25	210 ± 30	[1] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0$, $\omega\eta\pi^0$, $\pi^+\pi^-$

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$b_1(2240)$ $\quad I^G(J^{PC}) = 1^+(1^{+-})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2240 ± 35	320 ± 85	[1] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0$, $\omega\eta\pi^0$, $\pi^+\pi^-$

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$f_2(2240)$ $I^G(J^{PC}) = 0^+(2^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2240±15	241 ± 30	[1] ANISOVICH	00J	SPEC	1.92–2.41 $p\overline{p}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
∼ 2226	∼ 226	HASAN	94	RVUE	$p\overline{p} \rightarrow \pi\pi$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99F, ANISOVICH 99J, ANISOVICH 99K, and ANISOVICH 00B. See also ANISOVICH 12.

$b_3(2245)$ $I^G(J^{PC}) = 1^+(3^{+-})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2245±50	320 ± 70	[1] BUGG	04C	RVUE

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$\eta_2(2250)$ $I^G(J^{PC}) = 0^+(2^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2248±20	280 ± 20	ANISOVICH	00I	SPEC
2267±14	290 ± 50	ANISOVICH	00J	SPEC

$\pi_4(2250)$ $I^G(J^{PC}) = 1^-(4^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2250±15	215 ± 25	ANISOVICH	01F	SPEC	2.0 $\overline{p}p \rightarrow 3\pi^0$, $\pi^0\eta$, $\pi^0\eta'$

$\omega_4(2250)$ $I^G(J^{PC}) = 0^-(4^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2250±30	150 ± 50	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$\omega_5(2250)$ $I^G(J^{PC}) = 0^-(5^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2250±70	320 ± 95	[1] BUGG	04	RVUE

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$\omega_3(2255)$ $I^G(J^{PC}) = 0^-(3^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2255±15	175 ± 30	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$a_4(2255)$ $I^G(J^{PC}) = 1^-(4^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2237± 5	291 ± 12	UMAN	06	E835	5.2 $\overline{p}p \rightarrow \eta\eta\pi^0$
2255±40	330^{+110}_{-50}	[1] ANISOVICH	01F	SPEC	1.96–2.41 $\overline{p}p$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99E, and ANISOVICH 01F.

$a_2(2255)$ $I^G(J^{PC}) = 1^-(2^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2255±20	230 ± 15	[1] ANISOVICH	01G	SPEC	1.96–2.41 $\overline{p}p$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99E, ANISOVICH 01F, and ANISOVICH 01G.

$X(2260)$ $I^G(J^{PC}) = 0^+(4^{+?})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2260±20	400 ± 100	EVANGELIS...	79	OMEG	10,16 $\pi^- p \rightarrow \overline{p}pn$

$\rho(2270)$ $I^G(J^{PC}) = 1^+(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2265±40	325 ± 80	[1] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0$, $\omega\eta\pi^0$, $\pi^+\pi^-$
2280±50	440 ± 110	ATKINSON	85	OMEG	20–70 $\gamma p \rightarrow p\omega\pi^+\pi^-\pi^0$

[1] From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.

$a_1(2270)$ $I^G(J^{PC}) = 1^-(1^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2270^{+55}_{-40}	305^{+70}_{-40}	ANISOVICH	01F	SPEC	2.0 $\overline{p}p \rightarrow 3\pi^0$, $\pi^0\eta$, $\pi^0\eta'$

$h_3(2275)$ $I^G(J^{PC}) = 0^-(3^{+-})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2275±25	190 ± 45	[1] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$

[1] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$a_3(2275)$ $I^G(J^{PC}) = 1^-(3^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2275±35	$350^{+100}_{-\ 50}$	[1] ANISOVICH	01G	SPEC	1.96–2.41 $\overline{p}p$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99E, ANISOVICH 01F, and ANISOVICH 01G.

$\pi_2(2285)$ $I^G(J^{PC}) = 1^-(2^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2285±20±25	250 ± 20 ± 25	[1] ANISOVICH	11	SPEC	0.9–1.94 $p\overline{p}$

[1] Reanalysis of ADOMEIT 96 and ANISOVICH 00E.

$\omega_3(2285)$ $\quad I^G(J^{PC}) = 0^-(3^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2278±28	224 ± 50	[1] BUGG	04A	RVUE	
2285±60	230 ± 40	[2] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$

[1] Partial wave analysis of the data on $p\overline{p} \rightarrow \overline{\Lambda}\Lambda$ from BARNES 00.
[2] From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.

$\omega(2290)$ $\quad I^G(J^{PC}) = 0^-(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2290±20	275 ± 35	[1] BUGG	04A	RVUE

[1] Partial wave analysis of the data on $p\overline{p} \rightarrow \overline{\Lambda}\Lambda$ from BARNES 00.

$f_2(2295)$ $\quad I^G(J^{PC}) = 0^+(2^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2293±13	216 ± 37	[1] ANISOVICH	00J	SPEC	1.92–2.41 $p\overline{p}$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99F, ANISOVICH 99J, ANISOVICH 99K, and ANISOVICH 00B. See also ANISOVICH 12.

$f_3(2300)$ $\quad I^G(J^{PC}) = 0^+(3^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2334±25	200 ± 20	[1] BUGG	04A	RVUE

[1] Partial wave analysis of the data on $p\overline{p} \rightarrow \overline{\Lambda}\Lambda$ from BARNES 00.

$f_1(2310)$ $\quad I^G(J^{PC}) = 0^+(1^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2310±60	255 ± 70	ANISOVICH	00J	SPEC

$\eta(2320)$ $\quad I^G(J^{PC}) = 0^+(0^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2320±15	230 ± 35	[1] ANISOVICH	00M	SPEC

[1] From the combined analysis of $\overline{p}p \rightarrow \eta\eta\eta$ from ANISOVICH 00M and $\overline{p}p \rightarrow \eta\pi^0\pi^0$ from ANISOVICH 00J.

$\eta_4(2330)$ $\quad I^G(J^{PC}) = 0^+(4^{-+})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2328±38	240 ± 90	ANISOVICH	00J	SPEC	2.0 $p\overline{p} \rightarrow \eta\pi^0\pi^0$

$\omega(2330)$ $\quad I^G(J^{PC}) = 0^-(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2330±30	435 ± 75	ATKINSON	88	OMEG	25–50 $\gamma p \rightarrow \rho^\pm\rho^0\pi^\mp$

X(2340) $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	*WIDTH* (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2340 ± 20	180 ± 60	126	[1] BALTAY	75	HBC	$15\ \pi^+ p \to p 5\pi$

[1] Dominant decay into $\rho^0\rho^0\pi^+$. BALTAY 78 finds confirmation in $2\pi^+\pi^-2\pi^0$ events which contain $\rho^+\rho^0\pi^0$ and $2\rho^+\pi^-$.

π(2360) $I^G(J^{PC}) = 1^-(0^{-+})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2360 ± 25	$300^{+100}_{-\ 50}$	ANISOVICH	01F	SPEC	$2.0\ \overline{p}p \to 3\pi^0, \pi^0\eta, \pi^0\eta'$

X(2360) $I^G(J^{PC}) = ?^?(4^{+?})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2360 ± 10	430 ± 30	ROZANSKA	80	SPRK	$18\ \pi^- p \to p\overline{p}n$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$2356\pm\ 7\pm15$	$304\pm28\pm54$	[1] ABLIKIM	23AY	BES3	$e^+e^- \to (\Lambda\overline{\Lambda})\eta$

[1] Assuming $J^{PC} = 1^{--}$.

X(2440) $I^G(J^{PC}) = ?^?(5^{-?})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2440 ± 10	310 ± 20	ROZANSKA	80	SPRK	$18\ \pi^- p \to p\overline{p}n$

a_6(2450) $I^G(J^{PC}) = 1^-(6^{++})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2450 ± 130	400 ± 250	CLELAND	82B	SPEC	$50\ \pi p \to K^0_S K^\pm p$

X(2540) $I^G(J^{PC}) = 0^+(0^{++})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$2539\pm14^{+38}_{-14}$	$274^{+77}_{-61}{}^{+126}_{-163}$	UEHARA	13	BELL	$\gamma\gamma \to K^0_S K^0_S$

$\Gamma(\gamma\gamma)\times B(K\overline{K})$

VALUE (eV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$40^{+9}_{-7}{}^{+17}_{-40}$	UEHARA	13	BELL	$\gamma\gamma \to K^0_S K^0_S$

X(2600) $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$2618.3\pm2.0^{+16.3}_{-\ 1.4}$	$195\pm5^{+26}_{-17}$	ABLIKIM	22G	BES3	$J/\psi \to \gamma\pi^+\pi^-\eta'$

$B(J/\psi \to \gamma X(2600)) \times B(X(2600) \to f_0(1500)\eta') \times B(f_0(1500) \to \pi^+\pi^-)$

VALUE (units 10^{-5})	*DOCUMENT ID*		*TECN*	*COMMENT*
$3.09\pm0.21^{+1.14}_{-0.77}$	[1] ABLIKIM	22G	BES3	$J/\psi \to \gamma\pi^+\pi^-\eta'$

[1] The $\pi^+\pi^-$ mass spectrum is described by a coherent sum of two Breit-Wigner resonances, $f_0(1500)$ and a new $X(1540)$ with mass $1540.2 \pm 7.0^{+36.3}_{-\ 6.1}$ MeV and width $157 \pm 19^{+11}_{-77}$ MeV.

B($J/\psi \to \gamma X(2600)$) × B($X(2600) \to X(1540)\eta'$) × B($X(1540) \to \pi^+\pi^-$)

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
$2.69 \pm 0.19^{+0.38}_{-1.21}$	[1] ABLIKIM	22G	BES3	$J/\psi \to \gamma\pi^+\pi^-\eta'$

[1] The $\pi^+\pi^-$ mass spectrum is described by a coherent sum of two Breit-Wigner resonances, $f_0(1500)$ and a new $X(1540)$ with mass $1540.2 \pm 7.0^{+36.3}_{-\ 6.1}$ MeV and width $157 \pm 19^{+11}_{-77}$ MeV.

$K_0^*(2600)$ $I(J^P) = 1/2(0^+)$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
$2662 \pm 59 \pm 201$	$480 \pm 47 \pm 72$	[1] AAIJ	23AH	LHCB	$B^+ \to K^+(K_S^0 K\pi)$

[1] From Dalitz plot analyses of $\eta_c(1S, 2S) \to K_S^0 K^+\pi^-$ + c.c..

$X(2632)$ $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2635.2 ± 3.3		[1] EVDOKIMOV	04	SELX	$X(2632) \to D_s^+\eta$
2631.6 ± 2.1	< 17	[2] EVDOKIMOV	04	SELX	$X(2632) \to D^0 K^+$

[1] From a mass difference to D_s^+ of 666.9 ± 3.3 MeV.
[2] From a mass difference to D^0 of 767.0 ± 2.0 MeV.

B($X(2632) \to D^0 K^+$)/B($X(2632) \to D_s^+\eta$)

VALUE	DOCUMENT ID		TECN
0.14 ± 0.06	[1] EVDOKIMOV	04	SELX

[1] Possible interpretation of this decay pattern is discussed by YASUI 07.

$X(2680)$ $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2676 ± 27	150	CASO	70	HBC	11.2 $\pi^- p \to \rho^-\pi^+\pi^- p$

$X(2710)$ $I^G(J^{PC}) = ?^?(6^{+?})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2710 ± 20	170 ± 40	ROZANSKA	80	SPRK	18 $\pi^- p \to p\overline{p}n$

$X(2750)$ $I^G(J^{PC}) = ?^?(7^{-?})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2747 ± 32	195 ± 75	DENNEY	83	LASS	10 $\pi^+ p \to K^+K^-\pi^+ p$

f_6(3100) $I^G(J^{PC}) = 0^+(6^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
3100±100	700 ± 130	BINON	05	GAMS	33 $\pi^- p \to \eta\eta n$

X(3250) $I^G(J^{PC}) = ?^?(?^{??})$ 3-Body Decays

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
3250±8±20	45 ± 18	ALEEV	93	BIS2	$X(3250) \to \Lambda\overline{p}K^+$
3265±7±20	40 ± 18	ALEEV	93	BIS2	$X(3250) \to \overline{\Lambda}pK^-$

X(3250) $I^G(J^{PC}) = ?^?(?^{??})$ 4-Body Decays

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
3245±8±20	25 ± 11	ALEEV	93	BIS2	$X(3250) \to \Lambda\overline{p}K^+\pi^\pm$
3250±9±20	50 ± 20	ALEEV	93	BIS2	$X(3250) \to \overline{\Lambda}pK^-\pi^\mp$
3270±8±20	25 ± 11	ALEEV	93	BIS2	$X(3250) \to K^0_S p\overline{p}K^\pm$

X(3350) $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$3350^{+10}_{-20}\pm20$	$70^{+40}_{-30}\pm40$	50 ± 10	[1] GABYSHEV	06A	BELL	$B^- \to \Lambda_c^+\overline{p}\pi^-$

[1] A similar enhancement in the $\Lambda_c^+\overline{p}$ final state is also reported by BABAR collaboration in AUBERT 10H.

ψ(3760) $I^G(J^{PC}) = ?^?(1^{--})$

MASS (MeV)	DOCUMENT ID		TECN	COMMENT
3751.9±3.8±2.8	[1] ABLIKIM	24BO	BES3	$e^+e^- \to$ hadrons
∼ 3740	[1] ABLIKIM	24E	BES3	$e^+e^- \to$ light hadrons

[1] Fit to cross sections for $\sqrt{s}$ = 3645 to 3871 MeV.

ψ(3780) $I^G(J^{PC}) = ?^?(1^{--})$

MASS (MeV)	DOCUMENT ID		TECN	COMMENT
3778.7±0.5±0.3	[1] ABLIKIM	24BO	BES3	$e^+e^- \to$ hadrons
∼ 3780	[1] ABLIKIM	24E	BES3	$e^+e^- \to$ light hadrons

[1] Fit to cross sections for $\sqrt{s}$ = 3645 to 3871 MeV.

ψ(3810) $I^G(J^{PC}) = ?^?(1^{--})$

MASS (MeV)	DOCUMENT ID		TECN	COMMENT
3804.5±0.9±0.9	[1] ABLIKIM	24BO	BES3	$e^+e^- \to$ hadrons
∼ 3806	[1] ABLIKIM	24E	BES3	$e^+e^- \to$ light hadrons

[1] Fit to cross sections for $\sqrt{s}$ = 3645 to 3871 MeV.

h_c(4000) $I^G(J^{PC}) = 0^-(1^{+-})$

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
4000^{+17+29}_{-14-22}	184^{+71+97}_{-45-61}	1.6k	[1] AAIJ	24AB	LHCB	$B^+ \to D^{*\pm}D^\mp K^+$

[1] From a simultaneous amplitude analysis of $B^+ \to D^{*+} D^- K^+$, $B^+ \to D^{*-} D^+ K^+$ and their c.c.

$\chi_{c1}(4010)$ $I^G(J^{PC}) = 0^+(1^{++})$

MASS (MeV)	*WIDTH* (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$4012.5^{+3.6+4.1}_{-3.9-3.7}$	$62.7^{+7.0+6.4}_{-6.4-6.6}$	1.6k	[1] AAIJ	24AB	LHCB	$B^+ \to D^{*\pm} D^{\mp} K^+$

[1] From a simultaneous amplitude analysis of $B^+ \to D^{*+} D^- K^+$, $B^+ \to D^{*-} D^+ K^+$ and their c.c.

$h_c(4300)$ $I^G(J^{PC}) = 0^-(1^{+-})$

MASS (MeV)	*WIDTH* (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$4307.3^{+6.4+3.3}_{-6.6-4.1}$	58^{+28+28}_{-16-25}	1.6k	[1] AAIJ	24AB	LHCB	$B^+ \to D^{*\pm} D^{\mp} K^+$

[1] From a simultaneous amplitude analysis of $B^+ \to D^{*+} D^- K^+$, $B^+ \to D^{*-} D^+ K^+$ and their c.c.

$\psi(4500)$ $I^G(J^{PC}) = 0^-(1^{--})$

MASS (MeV)	*WIDTH* (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$4544.2 \pm 18.7 \pm 1.7$	$116.1 \pm 33.5 \pm 1.7$	[1] ABLIKIM	24D	BES3	$e^+ e^- \to \omega \gamma J/\psi$
$4469.1 \pm 26.2 \pm 3.6$	$246.3 \pm 36.7 \pm 9.4$	[2] ABLIKIM	23X	BES3	$e^+ e^- \to D^{*0} D^{*-} \pi^+$
$4484.7 \pm 13.3 \pm 24.1$	$111.1 \pm 30 \pm 15.2$	[3] ABLIKIM	22AU	BES3	$e^+ e^- \to K^+ K^- J/\psi$

[1] Assuming one single Breit-Wigner resonance in $\omega \chi_{c2}(1P)$ ($\chi_{c2} \to \gamma J/\psi$). Measured $\Gamma_{ee} \cdot$ B($\omega \chi_{c1}(1P)$) = 1.86 ± 0.32 ± 0.13 eV.

[2] From a cross-section measurement of $e^+ e^- \to D^{*0} D^{*-} \pi^+$ between 4.189 and 4.951 GeV, assuming a coherent sum of 3 Breit-Wigner resonances plus a continuum amplitude. $\Gamma(e^+ e^-) \cdot$B($D^{*0} D^{*-} \pi^+$) = 107–1744 eV depending on solutions I – VIII with the same fit qualities. The two other resonances have masses (widths) 4209.6 ± 7.5 (81.6 ± 19.9) MeV and 4675.3 ± 29.7 (218.3 ± 73.5) MeV.

[3] ABLIKIM 22AU cross sections analysis of the process $e^+ e^- \to K^+ K^- J/\psi$ at c.m. energies 4.127–4.600 GeV from 15.6 fb^{-1} of data.

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