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 $d C \to \gamma\gamma X$

[1] Not seen in $p C \to \gamma\gamma X$ 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	[2] VLADIMIRSK...08	40 $\pi^- p \to K^0_S K^0_S n + \text{m}\pi^0$

[2] 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(1200–1600) $I^G(J^{PC}) = 0^+(0^{++})$

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}	[3] ANISOVICH 03	SPEC	
1530^{+90}_{-250}	560 ± 40	[4] ANISOVICH 03	SPEC	

[3] 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.

[4] 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	[5] VLADIMIRSK...08	40 $\pi^- p \to K^0_S K^0_S n + \text{m}\pi^0$

[5] Supersedes VLADIMIRSKII 00.

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID	TECN	COMMENT
$1576^{+49}_{-55}{}^{+98}_{-91}$	$818^{+22}_{-23}{}^{+64}_{-133}$	[6] ABLIKIM 06S	BES	$J/\psi \to K^+K^-\pi^0$

[6] 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	[7] ALBRECHT 91F	ARG	$10.2\ e^+e^- \to e^+e^-2(\pi^+\pi^-)$

[7] 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
$1731.0\pm1.2\pm2.0$	$3.2 \pm 0.8 \pm 1.3$	58	VLADIMIRSK...07	SPEC	$40\ \pi^- p \to K^0_S K^0_S X$

$X(1750)$ $I^G(J^{PC}) = ?^?(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID	TECN	COMMENT
$1753.5\pm1.5\pm2.3$	$122.2 \pm 6.2 \pm 8.0$	LINK 02K	FOCS	$20–160\ \gamma p \to K^+K^-p$

$B(X(1750) \to \overline{K}^*(892)^0 K^0 \to K^\pm\pi^\mp K^0_S)/B(X(1750) \to K^+K^-)$

VALUE	CL%	DOCUMENT ID	TECN
<0.065	90	LINK 02K	FOCS

$B(X(1750) \to K^*(892)^\pm K^\mp \to K^0_S\pi^\pm K^\mp)/B(X(1750) \to K^+K^-)$

VALUE	CL%	DOCUMENT ID	TECN
<0.183	90	LINK 02K	FOCS

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

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
1755 ± 10	67 ± 12	870	[8] 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	[9] 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	[9] 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	[9] 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	[9] SCHEGELSKY 06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$

[8] From analysis of L3 data at 91 and 183–209 GeV.
[9] 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	$\gamma p \to n\pi^+\pi^+\pi^-$

***f*$_0$(1800)** $I^G(J^{PC}) = 0^+(0^{++})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID	TECN	COMMENT
$1795\pm\ 7^{+23}_{-20}$	$95\pm10^{+78}_{-82}$	ABLIKIM 13J	BES3	$J/\psi \to \gamma\omega\phi$
$1812^{+19}_{-26}\pm18$	$105\pm20\pm28$	[10] ABLIKIM 06J	BES2	$J/\psi \to \gamma\omega\phi$

[10] Not seen by LIU 09 in $B^\pm \to K^\pm\omega\phi$.

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

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

[11] 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
$1874\pm43\pm96$	$385\pm121\pm114$	CHUNG 02	B852	18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$

$B(a_3(1875) \to f_2(1270)\pi)/B(a_3(1875) \to \rho\pi)$

VALUE	DOCUMENT ID		TECN	COMMENT
0.8 ± 0.2	[12] CHUNG	02	B852	$18.3\ \pi^- p \to \pi^+\pi^-\pi^- p$

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

$B(a_3(1875) \to \rho_3(1690)\pi)/B(a_3(1875) \to \rho\pi)$

VALUE	DOCUMENT ID		TECN	COMMENT
0.9 ± 0.3	[13] CHUNG	02	B852	$18.3\ \pi^- p \to \pi^+\pi^-\pi^- p$

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

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

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	[14] ANISOVICH	02	SPEC	$0.6–1.9\ p\overline{p} \to \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$

[14] 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	[15] ANISOVICH	02B	SPEC	$0.6–1.9\ p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

[15] 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}	[16] ANISOVICH	01F	SPEC	$1.96–2.41\ \overline{p}p$

[16] 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	[17] ANISOVICH	02B	SPEC	$0.6–1.9\ p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

[17] 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	[18] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0$, $\omega\eta\pi^0$, $\pi^+\pi^-$

[18] 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	[19] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$

[19] 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 $K^+ p \rightarrow 2K^0_S 2\pi X$

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

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

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

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

[20] 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±10±40	190 ± 22 ± 100	18k	[21] SCHEGELSKY	06	RVUE	$\gamma\gamma \rightarrow \pi^+\pi^-\pi^0$
2003±10±19	249 ± 23 ± 32		LU	05	B852	18 $\pi^- p \rightarrow \omega\pi^-\pi^0 p$

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

$\Gamma(\gamma\gamma)\,\Gamma(\pi^+\pi^-\pi^0)$ / Γ(total)

VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT
$0.11\pm0.04\pm0.05$	18k	[22] SCHEGELSKY 06	RVUE	$\gamma\gamma \rightarrow \pi^+\pi^-\pi^0$

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

ρ(2000) $I^G(J^{PC}) = 1^+(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID	TECN	COMMENT
2000 ± 30	260 ± 45	[23] BUGG 04C	RVUE	Compilation
~ 1988	~ 244	HASAN 94	RVUE	$\overline{p}p \rightarrow \pi\pi$

[23] 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	$\overline{p}p \rightarrow \pi\pi$

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
1964 ± 35	225 ± 50	[24] ARMSTRONG 93D	E760		$\overline{p}p \rightarrow 3\pi^0 \rightarrow 6\gamma$
~ 2100	~ 500	[24] ANTIPOV 77	CIBS	$-$	25 $\pi^- p \rightarrow p\pi^-\rho_3$
2214 ± 15	355 ± 21	[25] BALTAY 77	HBC	0	15 $\pi^- p \rightarrow \Delta^{++}3\pi$
2080 ± 40	340 ± 80	KALELKAR 75	HBC	$+$	15 $\pi^+ p \rightarrow p\pi^+\rho_3$

[24] Cannot determine spin to be 3.
[25] 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	$\pi^- p \rightarrow K^0_S K^0_S MM$

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
$2014\pm20\pm16$	$230\pm32\pm73$	145k	LU 05	B852	18 $\pi^- p \rightarrow \omega\pi^-\pi^0 p$
$2001\pm30\pm92$	$333\pm52\pm49$	69k	KUHN 04	B852	18 $\pi^- p \rightarrow \eta\pi^+\pi^-\pi^- p$

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

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	[26] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

[26] 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	[27] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \to \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$

[27] 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	[28] ANISOVICH	01F	SPEC	1.96–2.41 $\overline{p}p$

[28] 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	[29] ANISOVICH	01F	SPEC	1.96–2.41 $\overline{p}p$

[29] 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±5±15	205 ± 10 ± 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	[30] ANISOVICH	11	SPEC	0.9–1.94 $p\overline{p}$

[30] 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	[31] ANISOVICH	11	SPEC	0.9–1.94 $p\overline{p}$

[31] 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	[32] ANISOVICH	11	SPEC	0.9–1.94 $p\overline{p}$

[32] 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 $p\overline{p} \to \eta\pi^0\pi^0$

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
∼ 2050	∼ 120	[33] OAKDEN	94	RVUE	0.36–1.55 $\overline{p}p \to \pi\pi$
∼ 2060	∼ 50	[33] OAKDEN	94	RVUE	0.36–1.55 $\overline{p}p \to \pi\pi$

[33] See SEMENOV 99 and KLOET 96.

π(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(2075) $I^G(J^{PC}) = ?^?(?^{??})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2075±12±5	90 ± 35 ± 9	[34] ABLIKIM	04J	BES2	$J/\psi \to K^- p\overline{\Lambda}$

[34] 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.

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 $\pi^- p \to p\overline{p}n$

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

MASS (MeV)	WIDTH (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
2096±17±121	451 ± 41 ± 81	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}	$250^{+36+181}_{-30-164}$		[35] ABLIKIM	16N	BES3	$J/\psi \to \gamma K^+ K^- K^+ K^-$
2103 ± 50	187 ± 75	586	[36] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$

[35] 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 = $2470^{+15+101}_{-19-23}$ MeV, $\Gamma = 230^{+64+56}_{-35-33}$ MeV).

[36] 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	$10,16\ \pi^- p \to \overline{p} p n$

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

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	$2.0\ \overline{p} p \to 3\pi^0, \pi^0\eta, \pi^0\eta'$

$\eta(2190)$ $I^G(J^{PC}) = 0^+(0^{-+})$

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

ω_2(2195) $I^G(J^{PC}) = 0^-(2^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2195±30	225 ± 40	[37] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$

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

ω(2205) $I^G(J^{PC}) = 0^-(1^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2205±30	350 ± 90	[38] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2210^{+79}_{-21}	203^{+437}_{-87}	EVANGELIS...	79B	OMEG	10 $\pi^- p \rightarrow K^+ K^- n$

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2207±22	130	CASO	70	HBC	11.2 $\pi^- p$

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2215±40	325 ± 55	[39] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$

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

ρ_2(2225) $I^G(J^{PC}) = 1^+(2^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2225±35	335^{+100}_{-50}	[40] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$

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

ρ_4(2230) $I^G(J^{PC}) = 1^+(4^{--})$

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2230±25	210 ± 30	[41] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2240±35	320 ± 85	[42] ANISOVICH	02	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$

[42] 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	[43] 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	$p\overline{p} \rightarrow \pi\pi$

[43] 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	[44] BUGG	04C	RVUE

[44] 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	[45] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$

[45] 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	[46] BUGG	04	RVUE

[46] 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	[47] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$

[47] 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 $\overline{p}p \to \eta\eta\pi^0$
2255 ± 40	330^{+110}_{-50}	[48] ANISOVICH	01F	SPEC	1.96–2.41 $\overline{p}p$

[48] 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	[49] ANISOVICH	01G	SPEC	1.96–2.41 $\overline{p}p$

[49] 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 $\pi^- p \to \overline{p}pn$

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

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

[50] 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 $\overline{p}p \to 3\pi^0$, $\pi^0\eta$, $\pi^0\eta'$

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2275 ± 25	190 ± 45	[51] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \to \omega\eta$, $\omega\pi^0\pi^0$

[51] 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}	[52] ANISOVICH	01G	SPEC	1.96–2.41 $\overline{p}p$

[52] 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	[53] ANISOVICH	11	SPEC	0.9–1.94 $p\overline{p}$

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2278±28	224 ± 50	[54] BUGG	04A	RVUE	
2285±60	230 ± 40	[55] ANISOVICH	02B	SPEC	0.6–1.9 $p\overline{p} \to \omega\eta, \omega\pi^0\pi^0$

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2290±20	275 ± 35	[56] BUGG	04A	RVUE

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2293±13	216 ± 37	[57] ANISOVICH	00J	SPEC	1.92–2.41 $p\overline{p}$

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2334±25	200 ± 20	[58] BUGG	04A	RVUE

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

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

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN
2320±15	230 ± 35	[59] ANISOVICH	00M	SPEC

[59] 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.

η_4(2330) $I^G(J^{PC}) = 0^+(4^{-+})$

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

ω(2330) $I^G(J^{PC}) = 0^-(1^{--})$

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	[60] BALTAY	75	HBC	15 $\pi^+ p \rightarrow p5\pi$

[60] 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 $\overline{p}p \rightarrow 3\pi^0, \pi^0\eta, \pi^0\eta'$

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2360±10	430 ± 30	ROZANSKA	80	SPRK	18 $\pi^- p \rightarrow p\overline{p}n$

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

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

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 $\pi p \rightarrow K^0_S K^{\pm} p$

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	$\gamma\gamma \rightarrow K^0_S K^0_S$

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

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
2635.2 ± 3.3		[61] EVDOKIMOV	04	SELX	$X(2632) \to D^+_s \eta$
2631.6 ± 2.1	< 17	[62] EVDOKIMOV	04	SELX	$X(2632) \to D^0 K^+$

[61] From a mass difference to D^+_s of 666.9 ± 3.3 MeV.

[62] 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	[63] EVDOKIMOV	04	SELX

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

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

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) $\quad I^G(J^{PC}) = ?^?(6^{+?})$

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) $\quad I^G(J^{PC}) = ?^?(7^{-?})$

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) $\quad I^G(J^{PC}) = 0^+(6^{++})$

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

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

MASS (MeV)	WIDTH (MeV)	DOCUMENT ID		TECN	COMMENT
$3250 \pm 8 \pm 20$	45 ± 18	ALEEV	93	BIS2	$X(3250) \to \Lambda\overline{p}K^+$
$3265 \pm 7 \pm 20$	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
$3245 \pm 8 \pm 20$	25 ± 11	ALEEV	93	BIS2	$X(3250) \to \Lambda \overline{p} K^+ \pi^\pm$
$3250 \pm 9 \pm 20$	50 ± 20	ALEEV	93	BIS2	$X(3250) \to \overline{\Lambda} p K^- \pi^\mp$
$3270 \pm 8 \pm 20$	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
$3350^{+10}_{-20} \pm 20$	$70^{+40}_{-30} \pm 40$	50 ± 10	[64] GABYSHEV	06A	BELL	$B^- \to \Lambda_c^+ \overline{p} \pi^-$

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

REFERENCES for Further States

ABLIKIM	16N	PR D93 112011	M. Ablikim	(BESIII Collab.)
ABLIKIM	13J	PR D87 032008	M. Ablikim *et al.*	(BESIII Collab.)
UEHARA	13	PTEP 2013 123C01	S. Uehara *et al.*	(BELLE Collab.)
ANISOVICH	12	PR D85 014001	A.V. Anisovich *et al.*	
ANASHIN	11	PL B703 543	V.V. Anashin *et al.*	(KEDR Collab.)
ANISOVICH	11	EPJ C71 1511	A.V. Anisovich *et al.*	(LOQM, RAL, PNPI)
CHEN	11F	PR D84 071501	P. Chen *et al.*	(BELLE Collab.)
AUBERT	10H	PR D82 031102	B. Aubert *et al.*	(BABAR Collab.)
ABRAAMYAN	09	PR C80 034001	Kh.U. Abraamyan *et al.*	
LIU	09	PR D79 071102	C. Liu *et al.*	(BELLE Collab.)
VLADIMIRSK...	08	PAN 71 2129	V.V. Vladimirsky *et al.*	(ITEP)
		Translated from YAF 71 2166.		
VLADIMIRSK...	07	PAN 70 1706	V. Vladimirsky *et al.*	
		Translated from YAF 70 1751.		
YASUI	07	PR D76 034009	S. Yasui, M. Oka	
ABLIKIM	06J	PRL 96 162002	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06S	PRL 97 142002	M. Ablikim *et al.*	(BES Collab.)
GABYSHEV	06A	PRL 97 242001	N. Gabyshev *et al.*	(BELLE Collab.)
SCHEGELSKY	06	EPJ A27 199	V.A. Schegelsky *et al.*	
SCHEGELSKY	06A	EPJ A27 207	V.A. Schegelsky *et al.*	
UMAN	06	PR D73 052009	I. Uman *et al.*	(FNAL E835)
VLADIMIRSK...	06	PAN 69 493	V.V. Vladimirsky *et al.*	(ITEP, Moscow)
		Translated from YAF 69 515.		
BINON	05	PAN 68 960	F. Binon *et al.*	
		Translated from YAF 68 998.		
GRIGOR'EV	05	PAN 68 1271	V.K. Grigor'ev *et al.*	(ITEP)
		Translated from YAF 68 1324.		
LU	05	PRL 94 032002	M. Lu *et al.*	(BNL E852 Collab.)
ABLIKIM	04J	PRL 93 112002	M. Ablikim *et al.*	(BES Collab.)
BUGG	04	PL B595 556 (errat.)	D.V. Bugg	
BUGG	04A	EPJ C36 161	D.V. Bugg	
BUGG	04C	PRPL 397 257	D.V. Bugg	
EVDOKIMOV	04	PRL 93 242001	A.V. Evdokimov *et al.*	(SELEX Collab.)
KUHN	04	PL B595 109	J. Kuhn *et al.*	(BNL E852 Collab.)
ANISOVICH	03	EPJ A16 229	V.V. Anisovich *et al.*	
VLADIMIRSK...	03	PAN 66 700	V.V. Vladimirsky *et al.*	
		Translated from YAF 66 729.		
ANISOVICH	02	PL B542 8	A.V. Anisovich *et al.*	
ANISOVICH	02B	PL B542 19	A.V. Anisovich *et al.*	
CHUNG	02	PR D65 072001	S.U. Chung *et al.*	(BNL E852 Collab.)
LINK	02K	PL B545 50	J.M. Link *et al.*	(FNAL FOCUS Collab.)
ANISOVICH	01C	PL B507 23	A.V. Anisovich *et al.*	
ANISOVICH	01D	PL B508 6	A.V. Anisovich *et al.*	
ANISOVICH	01E	PL B513 281	A.V. Anisovich *et al.*	
ANISOVICH	01F	PL B517 261	A.V. Anisovich *et al.*	
ANISOVICH	01G	PL B517 273	A.V. Anisovich *et al.*	
ANISOVICH	00B	NP A662 319	A.V. Anisovich *et al.*	
ANISOVICH	00D	PL B476 15	A.V. Anisovich *et al.*	
ANISOVICH	00E	PL B477 19	A.V. Anisovich *et al.*	

ANISOVICH	00I	PL B491 40	A.V. Anisovich *et al.*	
ANISOVICH	00J	PL B491 47	A.V. Anisovich *et al.*	(RAL, LOQM, PNPI+)
ANISOVICH	00M	PL B496 145	A.V. Anisovich *et al.*	
BARNES	00	PR C62 055203	P.D. Barnes *et al.*	
FILIPPI	00	PL B495 284	A. Filippi *et al.*	(OBELIX Experiment)
VLADIMIRSKII	00	JETPL 72 486	V.V. Vladimirskii *et al.*	
		Translated from ZETFP 72 698.		
ANISOVICH	99C	PL B452 173	A.V. Anisovich *et al.*	
ANISOVICH	99E	PL B452 187	A.V. Anisovich *et al.*	
ANISOVICH	99F	NP A651 253	A.V. Anisovich *et al.*	
ANISOVICH	99J	PL B471 271	A.V. Anisovich *et al.*	
ANISOVICH	99K	PL B468 309	A.V. Anisovich *et al.*	
BUGG	99	PL B458 511	D.V. Bugg *et al.*	
FERRER	99	EPJ C10 249	A. Ferrer *et al.*	
SEMENOV	99	SPU 42 847	S.V. Semenov	
		Translated from UFN 42 937.		
ADOMEIT	96	ZPHY C71 227	J. Adomeit *et al.*	(Crystal Barrel Collab.)
KLOET	96	PR D53 6120	W.M. Kloet, F. Myhrer	(RUTG, NORD)
PROKOSHKIN	96	PD 41 247	Y.D. Prokoshkin, V.D. Samoilenko	(SERP)
		Translated from DANS 348 481.		
HASAN	94	PL B334 215	A. Hasan, D.V. Bugg	(LOQM)
OAKDEN	94	NP A574 731	M.N. Oakden, M.R. Pennington	(DURH)
ALEEV	93	PAN 56 1358	A.N. Aleev *et al.*	(BIS-2 Collab.)
		Translated from YAF 56 100.		
ARMSTRONG	93D	PL B307 399	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
ALBRECHT	91F	ZPHY C50 1	H. Albrecht *et al.*	(ARGUS Collab.)
CONDO	91	PR D43 2787	G.T. Condo *et al.*	(SLAC Hybrid Collab.)
BISELLO	89B	PR D39 701	G. Busetto *et al.*	(DM2 Collab.)
ATKINSON	88	ZPHY C38 535	M. Atkinson *et al.*	(BONN, CERN, GLAS+)
DAFTARI	87	PRL 58 859	I.K. Daftari *et al.*	(SYRA)
ALDE	86D	NP B269 485	D.M. Alde *et al.*	(BELG, LAPP, SERP, CERN+)
BRIDGES	86D	PL B180 313	D.L. Bridges *et al.*	(SYRA, BNL, CASE+)
GREEN	86	PRL 56 1639	D.R. Green *et al.*	(FNAL, ARIZ, FSU+)
ATKINSON	85	ZPHY C29 333	M. Atkinson *et al.*	(BONN, CERN, GLAS+)
DENNEY	83	PR D28 2726	D.L. Denney *et al.*	(IOWA, MICH)
CLELAND	82B	NP B208 228	W.E. Cleland *et al.*	(DURH, GEVA, LAUS+)
ASTON	81B	NP B189 205	D. Aston *et al.*	(BONN, CERN, EPOL, GLAS+)
ARESTOV	80	IHEP 80-165	Y.I. Arestov *et al.*	(SERP)
CHLIAPNIK...	80	ZPHY C3 285	P.V. Chliapnikov *et al.*	(SERP, BRUX, MONS)
KREYMER	80	PR D22 36	A.E. Kreymer *et al.*	(IND, PURD, SLAC+)
ROZANSKA	80	NP B162 505	M. Rozanska *et al.*	(MPIM, CERN)
EVANGELIS...	79	NP B153 253	C. Evangelista *et al.*	(BARI, BONN, CERN+)
EVANGELIS...	79B	NP B154 381	C. Evangelista *et al.*	(BARI, BONN, CERN+)
BALTAY	78	PR D17 52	C. Baltay *et al.*	(COLU, BING)
ANTIPOV	77	NP B119 45	Y.M. Antipov *et al.*	(SERP, GEVA)
BALTAY	77	PRL 39 591	C. Baltay, C.V. Cautis, M. Kalelkar	(COLU)
BALTAY	75	PRL 35 891	C. Baltay *et al.*	(COLU, BING)
KALELKAR	75	Thesis Nevis 207	M.S. Kalelkar	(COLU)
CASO	70	LNC 3 707	C. Caso *et al.*	(GENO, HAMB, MILA, SACL)