

Further States

OMITTED FROM SUMMARY TABLE

This section contains states observed by a single group OR STATES POORLY ESTABLISHED that thus need confirmation. Publications that exclude earlier claims in this section are listed under 'Other Related Papers.'

QUANTUM NUMBERS, MASSES, WIDTHS, AND BRANCHING RATIOS

X(1110)		$I^G(J^{PC}) = 0^+(\text{even}^{++})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
1107±4	111 ± 8 ± 15	DAFTARI	87 DBC	0. $\bar{p}n \rightarrow \rho^- \pi^+ \pi^-$	

f₀(1200–1600)		$I^G(J^{PC}) = 0^+(0^{++})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>		
1480 ⁺¹⁰⁰ ₋₁₅₀	1030 ⁺⁸⁰ ₋₁₇₀	⁵ ANISOVICH	03	SPEC	
1530 ⁺⁹⁰ ₋₂₅₀	560 ± 40	⁶ ANISOVICH	03	SPEC	

X(1420)		$I^G(J^{PC}) = 2^+(0^{++})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
1420±20	160 ± 10	FILIPPI	00 OBLX	0 $\bar{\pi}p \rightarrow \pi^+ \pi^+ \pi^-$	

X(1600)		$I^G(J^{PC}) = 2^+(2^{++})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
1600±100	400 ± 200	⁷ ALBRECHT	91F ARG	10.2 $e^+e^- \rightarrow e^+e^- 2(\pi^+ \pi^-)$	

X(1650)		$I^G(J^{PC}) = 0^-(?^{? -})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1652±7	<50	100	PROKOSHKIN 96	GAM2	32,38 $\pi p \rightarrow \omega \eta n$

X(1750)		$I^G(J^{PC}) = ?^?(1^{--})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
1753.5±1.5±2.3	122.2 ± 6.2 ± 8.0	LINK	02K FOCS	20–160 $\gamma p \rightarrow K^+ K^- p$	

$B(X(1750) \rightarrow \bar{K}^*(892)^0 K^0 \rightarrow K^\pm \pi^\mp K_S^0)/B(X(1750) \rightarrow K^+ K^-)$

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

$B(X(1750) \rightarrow \bar{K}^*(892)^\pm K^\mp \rightarrow K^\pm \pi^\mp K_S^0)/B(X(1750) \rightarrow K^+ K^-)$

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

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

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

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1856.6 ± 5	20 ± 5	BRIDGES	86D SPEC	0. $\bar{p}d \rightarrow \pi\pi N$

$X(1860)$ $I^G(J^{PC}) = ??(???)$

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1859 ⁺⁶ ₋₂₇	<30	BAI	03F BES2	$J/\psi \rightarrow \gamma p\bar{p}$

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
~ 1870	~ 10	DALKAROV	97 RVUE	0.0 $\bar{p}d \rightarrow p3\pi^- 2\pi^+$

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

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

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1874 ± 43 ± 96	385 ± 121 ± 114	CHUNG	02 E852	18.3 $\pi^- p \rightarrow \pi^+\pi^-\pi^- p$

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

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.8 ± 0.2	⁸ CHUNG	02 E852	18.3 $\pi^- p \rightarrow \pi^+\pi^-\pi^- p$

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

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.9 ± 0.3	⁸ CHUNG	02 E852	$18.3 \pi^- p \rightarrow \pi^+ \pi^- \pi^- p$

$\pi_2(1880) \quad I^G(J^{PC}) = 1^-(2^-+)$

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
$1876 \pm 11 \pm 67$	$146 \pm 17 \pm 62$	145k	LU	05 E852	$18 \pi^- p \rightarrow \omega \pi^- \pi^0 p$
$2003 \pm 88 \pm 148$	$306 \pm 132 \pm 121$	69k	KUHN	04 E852	$18 \pi^- p \rightarrow \eta \pi^+ \pi^- \pi^- p$
1880 ± 20	255 ± 45		ANISOVICH	01B	$\bar{p} p \rightarrow (a_2(1320)\eta)\pi^0$

$B(\pi_2(1880) \rightarrow a_2(1320)\eta) / B(\pi_2(1880) \rightarrow f_1(1285)\pi)$

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
22.7 ± 7.3	69k	KUHN	04 E852	$18 \pi^- p \rightarrow \eta \pi^+ \pi^- \pi^- p$

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

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

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1935 ± 20	215 ± 30	EVANGELISTA	79 OMEG	$10,16 \pi^- p \rightarrow \bar{p} p n$

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1940 ± 40	155 ± 40	⁹ ANISOVICH	02 SPEC	$0.6-1.9 p \bar{p} \rightarrow \omega \pi^0, \omega \eta \pi^0, \pi^+ \pi^-$

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1945 ± 20	115 ± 22	¹⁰ ANISOVICH	02B SPEC	$0.6-1.9 p \bar{p} \rightarrow \omega \eta, \omega \pi^0 \pi^0$

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1960 ± 25	195 ± 60	¹⁰ ANISOVICH	02B SPEC	$0.6-1.9 p \bar{p} \rightarrow \omega \eta, \omega \pi^0 \pi^0$

$b_1(1960)$		$I^G(J^{PC}) = 1^+(1^{+-})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
1960 ± 35	230 ± 50	⁹ ANISOVICH	02 SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$		

$\rho(1965)$		$I^G(J^{PC}) = 1^+(1^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
1970 ± 30	260 ± 45	⁹ ANISOVICH	02 SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$		
2000 ± 30	295 ± 85	ANISOVICH	00J SPEC			

$h_1(1965)$		$I^G(J^{PC}) = 0^-(1^{+-})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
1965 ± 45	345 ± 75	¹⁰ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$		

$f_1(1970)$		$I^G(J^{PC}) = 0^+(1^{++})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
1971 ± 15	240 ± 45	ANISOVICH	00J SPEC			

$X(1970)$		$I^G(J^{PC}) = ??(???)$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
1970 ± 10	40 ± 20	CHLIAPNIK...	80 HBC	32 $K^+p \rightarrow 2K_S^0 2\pi X$		

$X(1975)$		$I^G(J^{PC}) = ??(???)$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
1973 ± 15	80	30	CASO	70 HBC	11.2 $\pi^-p \rightarrow \rho 2\pi$	

$\omega_2(1975)$		$I^G(J^{PC}) = 0^-(2^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
1975 ± 20	175 ± 25	¹⁰ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$		

$a_2(1990)$		$I^G(J^{PC}) = 1^-(2^{++})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2003 ± 10 ± 19	249 ± 23 ± 32	LU	05 E852	18 $\pi^-p \rightarrow \omega\pi^-\pi^0 p$		
1990 ⁺¹⁵ ₋₃₀	190 ± 50	ANISOVICH	99C SPEC			

$\rho(2000)$		$I^G(J^{PC}) = 1^+(1^{--})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>		
2000±30	295 ± 85	ANISOVICH	00J	SPEC	

$f_2(2000)$		$I^G(J^{PC}) = 0^+(2^{++})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>		
2001±10	312 ± 32	ANISOVICH	00J	SPEC	

$X(2000)$		$I^G(J^{PC}) = 1^-(??^+)$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
1964±35	225 ± 50	11 ARMSTRONG	93D	E760	$\bar{p}p \rightarrow 3\pi^0 \rightarrow 6\gamma$
~ 2100	~ 500	11 ANTIPOV	77	CIBS	- 25 $\pi^- p \rightarrow p\pi^- \rho_3$
2214±15	355 ± 21	12 BALTAY	77	HBC	0 15 $\pi^- p \rightarrow \Delta^{++} 3\pi$
2080±40	340 ± 80	KALELKAR	75	HBC	+ 15 $\pi^+ p \rightarrow p\pi^+ \rho_3$

$X(2000)$		$I^G(J^{PC}) = ??(4^{++})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
1998±3±5	<15	VLADIMIRSKY03	SPEC	$\pi^- p \rightarrow K_S^0 K_S^0 M M$	

$\pi_2(2005)$		$I^G(J^{PC}) = 1^-(2^{-+})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1974±14±83	341 ± 61 ± 139	145k	LU	05	E852 18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$
2005±15	200 ± 40		ANISOVICH	01F	SPEC 2.0 $\bar{p}p \rightarrow 3\pi^0, \pi^0 \eta, \pi^0 \eta'$

$\eta(2010)$		$I^G(J^{PC}) = 0^+(0^{-+})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>		
2010 ⁺³⁵ ₋₆₀	270 ± 60	ANISOVICH	00J	SPEC	

$\pi_1(2015)$		$I^G(J^{PC}) = 1^-(1^{-+})$			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2013±25 OUR AVERAGE					
2014±20±16	230 ± 32 ± 73	145k	LU	05	E852 18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$

2001±30±92 333 ± 52 ± 49 69k KUHN 04 E852 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 $\pi p \rightarrow p p \bar{p} \pi(\pi)$

$h_3(2025)$ $I^G(J^{PC}) = 0^-(3^{+-})$
MASS (MeV) WIDTH (MeV) DOCUMENT ID TECN COMMENT
 2025±20 145 ± 30 ¹⁰ ANISOVICH 02B SPEC 0.6–1.9 $p\bar{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$

$b_3(2025)$ $I^G(J^{PC}) = 1^+(3^{+-})$
MASS (MeV) WIDTH (MeV) DOCUMENT ID TECN COMMENT
 2032±12 117 ± 11 ⁹ ANISOVICH 02 SPEC 0.6–1.9 $p\bar{p} \rightarrow \omega\pi^0, \omega\eta\pi^0, \pi^+\pi^-$

$\eta_2(2030)$ $I^G(J^{PC}) = 0^+(2^{-+})$
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
 0.74±0.17 ¹³ ANISOVICH 00E SPEC

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

VALUE DOCUMENT ID TECN
 0.072±0.016 ¹³ ANISOVICH 00E SPEC

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

VALUE DOCUMENT ID TECN
 0.074±0.026 ¹³ ANISOVICH 00E SPEC

$f_3(2050)$ $I^G(J^{PC}) = 0^+(3^{++})$
MASS (MeV) WIDTH (MeV) DOCUMENT ID TECN
 2048±8 213 ± 34 ANISOVICH 00J SPEC

$f_0(2060)$		$I^G(J^{PC}) = 0^+(0^{++})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
~ 2050	~ 120	14 OAKDEN	94 RVUE	0.36–1.55 $\bar{p}p \rightarrow \pi\pi$		
~ 2060	~ 50	14 OAKDEN	94 RVUE	0.36–1.55 $\bar{p}p \rightarrow \pi\pi$		

$\pi(2070)$		$I^G(J^{PC}) = 0^-(0^{-+})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2070 ± 35	310 ⁺¹⁰⁰ ₋₅₀	ANISOVICH	01F SPEC	2.0 $\bar{p}p \rightarrow 3\pi^0, \pi^0\eta, \pi^0\eta'$		

$a_3(2070)$		$I^G(J^{PC}) = 1^-(3^{++})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2070 ± 20	170 ± 40	ANISOVICH	99C SPEC			

$X(2075)$		$I^G(J^{PC}) = ??(???)$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2075 ± 12 ± 5	90 ± 35 ± 9	¹ ABLIKIM	04J BES2	$J/\psi \rightarrow K^- p \bar{\Lambda}$		
¹ From a fit in the region $M_{p\bar{\Lambda}} - M_p - M_{\Lambda} < 150$ MeV. S-wave in the $p\bar{\Lambda}$ system preferred.						

$a_2(2080)$		$I^G(J^{PC}) = 1^-(2^{++})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2060 ± 20	195 ± 30	ANISOVICH	99C SPEC			
2100 ⁺¹⁰ ₋₃₀	360 ⁺⁴⁰ ₋₁₀₀	ANISOVICH	99E SPEC			

$X(2080)$		$I^G(J^{PC}) = ??(???)$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2080 ± 10	110 ± 20	KREYMER	80 STRC	13 $\pi^- d \rightarrow p\bar{p}n(n_S)$		

$X(2080)$		$I^G(J^{PC}) = ??(3^{-?})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2080 ± 10	190 ± 15	ROZANSKA	80 SPRK	18 $\pi^- p \rightarrow p\bar{p}n$		

$a_1(2095)$		$I^G(J^{PC}) = 1^-(1^{++})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
2096 ± 17 ± 121	451 ± 41 ± 81	69k	KUHN	04 E852	18 $\pi^- p \rightarrow \eta\pi^+\pi^-\pi^-p$	

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

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
3.18 ± 0.64	69k	KUHN	04 E852	$18 \pi^- p \rightarrow \eta \pi^+ \pi^- \pi^- p$

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2103 ± 50	187 ± 75	586	15 BISELLO	89B DM2	$J/\psi \rightarrow 4\pi\gamma$

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

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

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2110 ± 10	330 ± 20	EVANGELISTA	79 OMEG	$10,16 \pi^- p \rightarrow \bar{p}pn$

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

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

$\omega(2145)$ $I^G(J^{PC}) = 0^-(1^{--})$

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2150 ± 20	235 ± 30	ANISOVICH	01C SPEC	$0.6-1.9 \bar{p}p \rightarrow \omega\eta$
2145 ± 20	200 ± 25	ANISOVICH	00D SPEC	

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2150 ± 10	260 ± 10	ROZANSKA	80 SPRK	$18 \pi^- p \rightarrow p\bar{p}n$

$a_2(2175)$ $I^G(J^{PC}) = 0^-(2^{++})$

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

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

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

$\omega_2(2195)$		$I^G(J^{PC}) = 0^-(2^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2195 ± 30	225 ± 40	¹⁰ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta,$ $\omega\pi^0\pi^0$		

$\omega(2205)$		$I^G(J^{PC}) = 0^-(1^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2205 ± 30	350 ± 90	¹⁰ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta,$ $\omega\pi^0\pi^0$		

$X(2210)$		$I^G(J^{PC}) = ??(???)$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2210 ⁺⁷⁹ ₋₂₁	203 ⁺⁴³⁷ ₋₈₇	EVANGELISTA 79B	OMEG	¹⁰	$\pi^- p \rightarrow K^+ K^- n$	

$X(2210)$		$I^G(J^{PC}) = ??(???)$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2207 ± 22	130	CASO	70 HBC	11.2 $\pi^- p$		

$h_1(2215)$		$I^G(J^{PC}) = 0^-(1^{+-})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2215 ± 40	325 ± 55	¹⁰ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta,$ $\omega\pi^0\pi^0$		

$b_1(2240)$		$I^G(J^{PC}) = 1^+(1^{+-})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2240 ± 35	320 ± 85	⁹ ANISOVICH	02 SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\pi^0, \omega\eta\pi^0,$ $\pi^+\pi^-$		

$\rho_2(2240)$		$I^G(J^{PC}) = 1^+(2^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2225 ± 35	335 ⁺¹⁰⁰ ₋₅₀	⁹ ANISOVICH	02 SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\pi^0, \omega\eta\pi^0,$ $\pi^+\pi^-$		

$\rho_4(2240)$		$I^G(J^{PC}) = 1^+(4^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2230 ± 25	210 ± 30	⁹ ANISOVICH	02 SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\pi^0, \omega\eta\pi^0,$ $\pi^+\pi^-$		

$\pi_2(2245)$		$I^G(J^{PC}) = 0^-(2^{-+})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2245 ± 60	320 ⁺¹⁰⁰ ₋₄₀	ANISOVICH	01F SPEC	2.0 $\bar{p}p \rightarrow 3\pi^0$, $\pi^0\eta, \pi^0\eta'$		

$\eta_2(2250)$		$I^G(J^{PC}) = 0^+(2^{-+})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2248 ± 20	280 ± 20	ANISOVICH	00I SPEC			
2267 ± 14	290 ± 50	ANISOVICH	00J SPEC			

$\pi_4(2250)$		$I^G(J^{PC}) = 1^-(4^{-+})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2250 ± 15	215 ± 25	ANISOVICH	01F SPEC	2.0 $\bar{p}p \rightarrow 3\pi^0$, $\pi^0\eta, \pi^0\eta'$		

$\omega_4(2250)$		$I^G(J^{PC}) = 0^-(4^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2250 ± 30	150 ± 50	¹⁰ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$		

$\omega_3(2255)$		$I^G(J^{PC}) = 0^-(3^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2255 ± 15	175 ± 30	¹⁰ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta$, $\omega\pi^0\pi^0$		

$X(2260)$		$I^G(J^{PC}) = 0^+(4^{+?})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2260 ± 20	400 ± 100	EVANGELISTA	79 OMEG	10,16 $\pi^- p \rightarrow \bar{p}pn$		

$\rho(2265)$		$I^G(J^{PC}) = 1^+(1^{--})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2265 ± 40	325 ± 80	⁹ ANISOVICH	02 SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\pi^0, \omega\eta\pi^0$, $\pi^+\pi^-$		

$a_1(2270)$		$I^G(J^{PC}) = 1^-(1^{++})$				
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
2270 ⁺⁵⁵ ₋₄₀	305 ⁺⁷⁰ ₋₄₀	ANISOVICH	01F SPEC	2.0 $\bar{p}p \rightarrow 3\pi^0$, $\pi^0\eta, \pi^0\eta'$		

$a_2(2270)$ $I^G(J^{PC}) = 1^-(2^{++})$

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>
2265 ± 20	235^{+60}_{-35}	ANISOVICH	99C SPEC
2280 ± 30	280 ± 50	ANISOVICH	99E SPEC

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2275 ± 25	190 ± 45	¹⁰ ANISOVICH	02B SPEC	$0.6-1.9 p\bar{p} \rightarrow \omega\eta,$ $\omega\pi^0\pi^0$

$a_4(2280)$ $I^G(J^{PC}) = 1^-(4^{++})$

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>
2300 ± 20	230 ± 40	ANISOVICH	99C SPEC
2260 ± 15	180 ± 20	ANISOVICH	99E SPEC

$\eta(2280)$ $I^G(J^{PC}) = 0^+(0^{-+})$

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>
2285 ± 20	325 ± 30	ANISOVICH	00J SPEC
2320 ± 15	230 ± 35	¹⁶ ANISOVICH	00M SPEC

$\rho(2280)$ $I^G(J^{PC}) = 1^+(1^{--})$

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2280 ± 50	440 ± 110	ATKINSON	85 OMEG	$20-70 \gamma p \rightarrow$ $p\omega\pi^+\pi^-\pi^0$

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2285 ± 60	230 ± 40	¹⁰ ANISOVICH	02B SPEC	$0.6-1.9 p\bar{p} \rightarrow \omega\eta,$ $\omega\pi^0\pi^0$

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>
2290 ± 20	275 ± 35	² BUGG	04A RVUE

² Partial wave analysis of the data on $p\bar{p} \rightarrow \bar{\Lambda}\Lambda$ from BARNES 00.

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

<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>
2303 ± 15	214 ± 29	ANISOVICH	00J SPEC

$\rho_3(2300)$ $I^G(J^{PC}) = 1^+(3^{--})$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>		
2300 ⁺⁵⁰ ₋₈₀	340 ± 50		ANISOVICH	00J	SPEC	
<hr/>						
$a_3(2310)$ $I^G(J^{PC}) = 1^-(3^{++})$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>		
2310 ± 40	180 ⁺¹²⁰ ₋₆₀		ANISOVICH	99C	SPEC	
<hr/>						
$f_1(2310)$ $I^G(J^{PC}) = 0^+(1^{++})$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>		
2310 ± 60	255 ± 70		ANISOVICH	00J	SPEC	
<hr/>						
$\eta_4(2320)$ $I^G(J^{PC}) = 0^+(4^{-+})$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>		
2328 ± 38	240 ± 90		ANISOVICH	00J	SPEC	
<hr/>						
$f_0(2330)$ $I^G(J^{PC}) = 0^+(0^{++})$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>		
2337 ± 14	217 ± 33		ANISOVICH	00J	SPEC	
~ 2321	~ 223		HASAN	94		
<hr/>						
$\omega(2330)$ $I^G(J^{PC}) = 0^-(1^{--})$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
2330 ± 30	435 ± 75		ATKINSON	88	OMEG	25-50 $\gamma p \rightarrow \rho^\pm \rho^0 \pi^\mp$
<hr/>						
$a_1(2340)$ $I^G(J^{PC}) = 1^-(1^{++})$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>		
2340 ± 40	230 ± 70		ANISOVICH	99E	SPEC	
<hr/>						
$X(2340)$ $I^G(J^{PC}) = ??(???)$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
2340 ± 20	180 ± 60	126	17 BALTAY	75	HBC	15 $\pi^+ p \rightarrow p 5\pi$
<hr/>						
$\pi(2360)$ $I^G(J^{PC}) = 0^-(0^{-+})$						
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
2360 ± 25	300 ⁺¹⁰⁰ ₋₅₀		ANISOVICH	01F	SPEC	2.0 $\bar{p} p \rightarrow 3\pi^0, \pi^0 \eta, \pi^0 \eta'$
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X(2360) $I^G(J^{PC}) = ??(4^{+?})$		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>			
2360 ± 10	430 ± 30	ROZANSKA	80 SPRK	18 $\pi^- p \rightarrow p\bar{p}n$

X(2440) $I^G(J^{PC}) = ??(5^{-?})$		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>			
2440 ± 10	310 ± 20	ROZANSKA	80 SPRK	18 $\pi^- p \rightarrow p\bar{p}n$

X(2632) $I^G(J^{PC}) = ??(???)$		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>			
2632.6 ± 1.8 OUR AVERAGE				
2635.2 ± 3.3		³ EVDOKIMOV	04 SELX	X(2632) → $D_S^+ \eta$
2631.6 ± 2.1	< 17	⁴ EVDOKIMOV	04 SELX	X(2632) → $D_S^0 K^+$

³ From a mass difference to D_S^+ of 666.9 ± 3.3 MeV.

⁴ From a mass difference to D_S^0 of 767.0 ± 2.0 MeV.

B(X(2632) → $D_S^0 K^+$)/B(X(2632) → $D_S^+ \eta$)

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>
0.14 ± 0.06	EVDOKIMOV	04 SELX

X(2680) $I^G(J^{PC}) = ??(???)$		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>			
2676 ± 27	150	CASO	70 HBC	11.2 $\pi^- p \rightarrow \rho^- \pi^+ \pi^- p$

X(2710) $I^G(J^{PC}) = ??(6^{+?})$		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>			
2710 ± 20	170 ± 40	ROZANSKA	80 SPRK	18 $\pi^- p \rightarrow p\bar{p}n$

X(2750) $I^G(J^{PC}) = ??(7^{-?})$		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>			
2747 ± 32	195 ± 75	DENNEY	83 LASS	10 $\pi^+ p \rightarrow K^+ K^- \pi^+ p$

X(3250) $I^G(J^{PC}) = ??(???)$ 3-Body Decays		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>			
3250 ± 8 ± 20	45 ± 18	ALEEV	93 BIS2	X(3250) → $\Lambda \bar{p} K^+$
3265 ± 7 ± 20	40 ± 18	ALEEV	93 BIS2	X(3250) → $\bar{\Lambda} p K^-$

X(3250)	$I^G(J^{PC}) = ??(???)$	4-Body Decays			
<u>MASS (MeV)</u>	<u>WIDTH (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
3245 ± 8 ± 20	25 ± 11	ALEEV	93 BIS2	X(3250) → $\Lambda \bar{p} K^+ \pi^\pm$	
3250 ± 9 ± 20	50 ± 20	ALEEV	93 BIS2	X(3250) → $\bar{\Lambda} p K^- \pi^\mp$	
3270 ± 8 ± 20	25 ± 11	ALEEV	93 BIS2	X(3250) → $K_S^0 \rho \bar{p} K^\pm$	

FOOTNOTES for Further States

- ⁵ K-matrix pole from combined analysis of $\pi^- p \rightarrow \pi^0 \pi^0 n$, $\pi^- p \rightarrow K \bar{K} n$, $\pi^+ \pi^- \rightarrow \pi^+ \pi^-$, $\bar{p} p \rightarrow \pi^0 \pi^0 \pi^0$, $\pi^0 \eta \eta$, $\pi^0 \pi^0 \eta$, $\pi^+ \pi^- \pi^0$, $K^+ K^- \pi^0$, $K_S^0 K_S^0 \pi^0$, $K^+ K_S^0 \pi^-$ at rest, $\bar{p} n \rightarrow \pi^- \pi^- \pi^+$, $K_S^0 K^- \pi^0$, $K_S^0 K_S^0 \pi^-$ at rest.
- ⁶ K-matrix pole from combined analysis of $\pi^- p \rightarrow \pi^0 \pi^0 n$, $\pi^- p \rightarrow K \bar{K} n$, $\bar{p} p \rightarrow \pi^0 \pi^0 \pi^0$, $\pi^0 \eta \eta$, $\pi^0 \pi^0 \eta$ at rest.
- ⁷ Our estimate.
- ⁸ Using the observable fractions of 50.0% $\rho \pi$, 56.5% $f_2 \pi$, and 11.8% $\rho_3 \pi$.
- ⁹ From the combined analysis of ANISOVICH 00J, ANISOVICH 01D, ANISOVICH 01E, and ANISOVICH 02.
- ¹⁰ From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.
- ¹¹ Cannot determine spin to be 3.
- ¹² BALTAY 77 favors $J^P = ,3^+$.
- ¹³ Corrected for all decay modes.
- ¹⁴ See SEMENOV 99 and KLOET 96.
- ¹⁵ ASTON 81B sees no peak, has 850 events in Ajinenko+Barth bins. ARESTOV 80 sees no peak.
- ¹⁶ Combined fit along with data of ANISOVICH 00J.
- ¹⁷ 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 $2\rho^+ \pi^-$.

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MAIANI	04	PR D70 054009	L. Maiani <i>et al.</i>	
SIMONOV	04	PR D70 114013	Yu.A. Simonov, J.A. Tjon	
SWANSON	04	PL B582 167	E. Swanson	
VANBEVEREN	04A	PRL 93 202001	E. Vanbeveren, G. Rupp	
ZOU	04	PR D69 034004	B.S. Zou, H.C. Chiang	
DATTA	03B	PL B567 273	A. Datta, P.J. O'Donnell	
ROSNER	03B	PR D68 014004	J.L. Rosner	
WANG	03	PRL 90 201802	M.-Z. Wang <i>et al.</i>	(BELLE Collab.)
ABE	02K	PRL 88 181803	K. Abe <i>et al.</i>	(BELLE Collab.)
ABE	02W	PRL 89 151802	K. Abe <i>et al.</i>	(BELLE Collab.)
ANISOVICH	01E	PL B513 281	A.V. Anisovich <i>et al.</i>	
ABELE	00B	EPJ C17 583	A. Abele <i>et al.</i>	
BARNES	00	PR C62 055203	P.D. Barnes <i>et al.</i>	
BOLONKIN	00	JETPL 72 166	B.V. Bolonkin <i>et al.</i>	
		Translated from ZETFP 72 240.		

ANISOVICH	99F	NP A651 253	A.V. Anisovich <i>et al.</i>
CHIBA	99	PR C60 035204	M. Chiba <i>et al.</i>
BUZZO	97	ZPHY C76 475	A. Buzzo <i>et al.</i> (JETSET Collab.)
CHIBA	97	PR D55 40	M. Chiba <i>et al.</i> (FUKI, INUS, KEK, SANG+)
BARNES	94	PL B331 203	P.D. Barnes <i>et al.</i> (PS185 Collab.)
CARBONELL	93	PL B306 407	J. Carbonell, K.V. Protasov, O.D. Dalkarov (ISNG+)
FERRER	93	NP A558 191c	A. Ferrer, A.A. Grigorian (WA56 Collab.)
CHIBA	91	PR D44 1933	M. Chiba <i>et al.</i> (FUKI, KEK, SANG, OSAK+)
GRAF	91	PR D44 1945	N.A. Graf <i>et al.</i> (UCI, PENN, NMSU, KARLK+)
TANIMORI	90	PR D41 744	T. Tanimori <i>et al.</i> (KEK, INUS, KYOT+)
ALBRECHT	89M	PL B217 205	H. Albrecht <i>et al.</i> (ARGUS Collab.)
BEHREND	89D	PL B218 493	H.J. Behrend <i>et al.</i> (CELLO Collab.)
BUSENITZ	89	PR D40 1	J.K. Busenitz <i>et al.</i> (ILL, FNAL)
CHIBA	88	PL B202 447	M. Chiba, K. Doi (FUKI, INUS, KEK, SANG, OSAK+)
CHIBA	87	PR D36 3321	M. Chiba <i>et al.</i> (FUKI, INUS, KEK, SANG+)
FRANKLIN	87	PL B184 111	J. Franklin
LIU	87	PRL 58 2288	K.F. Liu, B.A. Li (STON)
ADIELS	86	PL B182 405	L. Adiels <i>et al.</i> (STOH, BASL, LASL, THES+)
ANGELOPO...	86	PL B178 441	A. Angelopoulos <i>et al.</i> (ATHU, UCI, KARLK+)
ARMSTRONG	86C	PL B175 383	T.A. Armstrong <i>et al.</i> (BNL, HOUS, PENN+)
BRIDGES	86	PRL 56 211	D.L. Bridges <i>et al.</i> (BLSU, BNL, CASE+)
BRIDGES	86B	PRL 56 215	D.L. Bridges <i>et al.</i> (SYRA, CASE)
BRIDGES	86C	PRL 57 1534	D.L. Bridges <i>et al.</i> (SYRA)
BRIDGES	86D	PL B180 313	D.L. Bridges <i>et al.</i> (SYRA, BNL, CASE+)
DOVER	86	PRL 57 1207	C.B. Dover <i>et al.</i> (BNL)
ANGELOPO...	85	PL 159B 210	A. Angelopoulos <i>et al.</i> (ATHU, UCI, UNM+)
BODENKAMP	85	NP B255 717	J. Bodenkamp <i>et al.</i> (KARLK, KARLE, DESY)
ADIELS	84	PL 138B 235	L. Adiels <i>et al.</i> (BASL, KARLK, KARLE, STOH+)
ATKINSON	84F	NP B239 1	M. Atkinson <i>et al.</i> (BONN, CERN, GLAS+)
AZOOZ	84	NP B244 277	F. Azooz, I. Butterworth (LOIC, RHEL, SACL+)
CLOUGH	84	PL 146B 299	A.S. Clough <i>et al.</i> (SURR, LOQM, ANIK+)
AZOOZ	83	PL 122B 471	F. Azooz, I. Butterworth (LOIC, RHEL, SACL+)
BARNETT	83	PR D27 493	B. Barnett <i>et al.</i> (JHU)
BODENKAMP	83	PL 133B 275	J. Bodenkamp <i>et al.</i> (KARLK, KARLE, DESY)
RICHTER	83	PL 126B 284	B. Richter, L. Adiels (BASL, KARLK, KARLE, STOH+)
AJALTOUNI	82	NP B209 301	Z. Ajaltouni <i>et al.</i> (CERN, NEUC+)
ASTON	81B	NP B189 205	D. Aston <i>et al.</i> (BONN, CERN, EPOL, GLAS+)
BANKS	81	PL 100B 191	A.D. Banks <i>et al.</i> (LIVP, CERN)
CHUNG	81	PRL 46 395	S.U. Chung <i>et al.</i> (BNL, BRAN, CINC+)
HARRIS	81	ZPHY C9 275	R.M. Harris <i>et al.</i> (SEAT, UCB)
ARESTOV	80	IHEP 80-165	Y.I. Arestov <i>et al.</i> (SERP)
ASTON	80D	PL 93B 517	D. Aston (BONN, CERN, EPOL, GLAS, LANC+)
BIONTA	80	PRL 44 909	R.M. Bionta <i>et al.</i> (BNL, CMU, FNAL+)
CARROLL	80	PRL 44 1572	A.S. Carroll <i>et al.</i> (BNL, PRIN)
DAUM	80E	PL 90B 475	C. Daum <i>et al.</i> (AMST, CERN, CRAC, MPIM+)
DEFOIX	80	NP B162 12	C. Defoix <i>et al.</i> (CDEF, PISA)
HAMILTON	80	PRL 44 1179	R.P. Hamilton <i>et al.</i> (LBL, BNL, MTHO)
HAMILTON	80B	PRL 44 1182	R.P. Hamilton <i>et al.</i> (LBL, BNL, MTHO)
KREYMER	80	PR D22 36	A.E. Kreymer <i>et al.</i> (IND, PURD, SLAC+)
ALBERI	79	PL 83B 247	G. Alberi <i>et al.</i> (TRST, CERN, IFRJ)
ARMSTRONG	79	PL B85 304	T.A. Armstrong <i>et al.</i> (DESY, GLAS)
BARTALUCCI	79	NC 49A 207	S. Bartalucci <i>et al.</i> (DESY, FRAS)
DELCOURT	79	PL 86B 395	B. Delcourt <i>et al.</i> (LALO)
GIBBARD	79	PRL 42 1593	B.G. Gibbard <i>et al.</i> (CORN)
SAKAMOTO	79	NP B158 410	S. Sakamoto <i>et al.</i> (INUS)
CARTER	78B	NP B141 467	A.A. Carter (LOQM)
ESPOSITO	78	LNC 22 305	B. Esposito, F. Felicetti (FRAS, NAPL, PADO+)
PAVLOPO...	78	PL 72B 415	P. Pavlopoulos <i>et al.</i> (KARLK, KARLE, BASL+)
PETERSON	78	PR D18 3955	D. Peterson <i>et al.</i> (CORN, HARV)
BENKHEIRI	77	PL 68B 483	P. Benkheiri <i>et al.</i> (CERN, CDEF, EPOL+)
BRUCKNER	77	PL 67B 222	W. Bruckner <i>et al.</i> (MPIH, HEIDP, CERN)
ABASHIAN	76	PR D13 5	A. Abashian <i>et al.</i> (ILL, ANL, CHIC+)
BRAUN	76	PL 60B 481	H.M. Braun <i>et al.</i> (STRB)
CHALOUPKA	76	PL 61B 487	V. Chaloupka <i>et al.</i> (CERN, LIVP, MONS+)
ALSTON-...	75	PRL 35 1685	M. Alston-Garnjost <i>et al.</i> (LBL, MTHO)
D'ANDLAU	75	PL 58B 223	C. d'Andlau <i>et al.</i> (CDEF, PISA)
KALOGERO...	75	PRL 34 1047	T. Kalogeropoulos, G.S. Tzanakos (SYRA)
CARROLL	74	PRL 32 247	A.S. Carroll <i>et al.</i> (BNL)
THOMPSON	74	NP B69 220	G. Thompson <i>et al.</i> (PURD)
DONALD	73	NP B61 333	R.A. Donald <i>et al.</i> (LIVP, PARIS)
ALEXANDER	72	NP B45 29	G. Alexander <i>et al.</i> (TELA)

ANTIPOV	72	PL 40 147	Y.M. Antipov <i>et al.</i>	(SERP)
TAKAHASHI	72	PR D6 1266	K. Takahashi <i>et al.</i>	(TOHOK, PENN, NDAM+)
BENVENUTI	71	PRL 27 283	A.C. Benvenuti <i>et al.</i>	(WISC)
SABAU	71	LNC 1 514	M. Sabeu, J.L. Uretsky	(BUCH, ANL)
BAUD	70	PL 31B 549	R. Baud <i>et al.</i>	(CERN Boson Spectrometer Collab.)
ANDERSON	69	PRL 22 1390	E.W. Anderson <i>et al.</i>	(BNL, CMU)
BOESEBECK	68	NP B4 501	K. Boesebeck <i>et al.</i>	(AACH, BERL, CERN)
HUSON	68	PL 28B 208	R. Huson <i>et al.</i>	(ORSAY, MILA, UCLA)
ALLES-...	67B	NC 50A 776	V. Alles-Borelli <i>et al.</i>	(CERN, BONN)
DANYSZ	67B	NC 51A 801	J.A. Danysz, B.R. French, V. Simak	(CERN)
CHIKOVANI	66	PL 22 233	G.E. Chikovani <i>et al.</i>	(SERP)
FOCACCI	66	PRL 17 890	M.N. Focacci <i>et al.</i>	(CERN)
