# Further States

## OMITTED FROM SUMMARY TABLE

This section contains states observed by a single group, and 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) $I^G(J^{PC}) = 0^+(\text{even}\,{+}{+})$

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

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| ~ 1870 | ~ 10 | DALKAROV | 97 | RVUE | 0.0 $\overline{p}d \to p3\pi^- 2\pi^+$ |

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

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

### $X(1870)$ $\quad I^G(J^{PC}) = ?^?(1^{--})$

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| $1870\pm10$ | $10\pm5$ | ANTONELLI | 96 | SPEC | $e^+e^- \to$ hadrons |

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *COMMENT* |
|---|---|---|---|---|
| $1880\pm20$ | $255\pm45$ | ANISOVICH | 01B | $\overline{p}p \to (a_2(1320)\eta)\pi^0$ |

### $\rho(1910)$ $\quad I^G(J^{PC}) = 1^+(1^{--})$

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| $1911\pm4\pm1$ | $29\pm11\pm4$ | FRABETTI | 01 | E687 | $\gamma p \to 3\pi^+3\pi^- p$ |

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| $1935\pm20$ | $215\pm30$ | EVANGELISTA | 79 | OMEG | 10,16 $\pi^- p \to \overline{p}pn$ |

### $\omega_3(1955)$ $\quad I^G(J^{PC}) = 0^-(3^{--})$

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| $1955\pm30$ | $165\pm30$ | ANISOVICH | 01C | SPEC | 0.6–1.9 $\overline{p}p \to \omega\eta$ |

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| $1960\pm40$ | $210\pm80$ | ANISOVICH | 01D | SPEC | 0.6–1.9 $\overline{p}p \to \omega\pi^0$ |

### $\rho(1965)$ $\quad I^G(J^{PC}) = 1^-(1^{--})$

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| $1965\pm30$ | $165\pm30$ | ANISOVICH | 01D | SPEC | 0.6–1.9 $\overline{p}p \to \omega\pi^0$ |

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* |
|---|---|---|---|---|
| $1971\pm15$ | $240\pm45$ | ANISOVICH | 00J | SPEC |

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| $1970\pm10$ | $40\pm20$ | 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 |
|---|---|---|---|---|---|---|
| $1973 \pm 15$ | 80 | 30 | CASO | 70 | HBC | $11.2\ \pi^- p \rightarrow \rho 2\pi$ |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $1990^{+15}_{-30}$ | $190 \pm 50$ | ANISOVICH | 99C | SPEC |

**$h_1(1995)$** $I^G(J^{PC}) = 0^-(1^{+-})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $1995 \pm 20$ | $205 \pm 20$ | ANISOVICH | 01C | SPEC | 0.6–1.9 $\overline{p} p \rightarrow \omega \eta$ |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2000 \pm 30$ | $295 \pm 85$ | ANISOVICH | 00J | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2001 \pm 10$ | $312 \pm 32$ | ANISOVICH | 00J | SPEC |

**$\pi_2(2005)$** $I^G(J^{PC}) = 1^-(2^{-+})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $2005 \pm 15$ | $200 \pm 40$ | ANISOVICH | 01F | SPEC | 2.0 $\overline{p} p \rightarrow 3\pi^0$, $\pi^0 \eta$, $\pi^0 \eta'$ |

**$\eta(2010)$** $I^G(J^{PC}) = 0^+(0^{-+})$

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

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2025 \pm 30$ | $330 \pm 75$ | ANISOVICH | 99C | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $2015 \pm 3$ | $10 \pm 4$ | FERRER | 99 | RVUE | $\pi p \rightarrow p p \overline{p} \pi (\pi)$ |

## $b_3(2025)$ $I^G(J^{PC}) = 1^-(3^{+-})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| 2025±15 | 107 ± 20 | ANISOVICH | 01D | SPEC | 0.6–1.9 $\overline{p}p \to \omega\pi^0$ |

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

| 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 | [1] ANISOVICH | 00E | SPEC |

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

| VALUE | DOCUMENT ID | | TECN |
|---|---|---|---|
| 0.072±0.016 | [1] ANISOVICH | 00E | SPEC |

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

| VALUE | DOCUMENT ID | | TECN |
|---|---|---|---|
| 0.074±0.026 | [1] 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 |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| ~ 2050 | ~ 120 | [2] OAKDEN | 94 | RVUE | 0.36–1.55 $\overline{p}p \to \pi\pi$ |
| ~ 2060 | ~ 50 | [2] OAKDEN | 94 | RVUE | 0.36–1.55 $\overline{p}p \to \pi\pi$ |

## $a_3(2070)$ $I^G(J^{PC}) = 1^-(3^{++})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| 2070±20 | 170 ± 40 | ANISOVICH | 99C | SPEC |

## $a_2(2080)$ $I^G(J^{PC}) = 1^-(2^{++})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| 2060±20 | 195 ± 30 | ANISOVICH | 99C | SPEC |
| $2100^{+10}_{-30}$ | $360^{+\ 40}_{-100}$ | ANISOVICH | 99E | SPEC |

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

| 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 $\pi^- p \rightarrow p\overline{p}n$ |

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

| *MASS* (MeV) | *WIDTH* (MeV) | *EVTS* | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|---|
| 2103±50 | 187 ± 75 | 586 | [3] BISELLO | 89B | DM2 | $J/\psi \rightarrow 4\pi\gamma$ |

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

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

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| 2110±10 | 330 ± 20 | EVANGELISTA | 79 | OMEG | 10,16 $\pi^- p \rightarrow \overline{p}pn$ |

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

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

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| 2150±20 | 235 ± 30 | ANISOVICH | 01C | SPEC | 0.6–1.9 $\overline{p}p \rightarrow \omega\eta$ |
| 2145±20 | 200 ± 25 | ANISOVICH | 00D | SPEC | |

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

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

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

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

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

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| $2210^{+79}_{-21}$ | $203^{+437}_{-87}$ | EVANGELISTA | 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 $\pi^- p$ |

**$\rho_2(2240)$** $I^G(J^{PC}) = 1^-(2^{--})$

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| 2240±55 | 330 ± 60 | ANISOVICH | 01D | SPEC | 0.6–1.9 $\overline{p}p \rightarrow \omega\pi^0$ |

**$\rho_4(2240)$** $I^G(J^{PC}) = 1^-(4^{--})$

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| 2240±25 | 190 ± 50 | ANISOVICH | 01D | SPEC | 0.6–1.9 $\overline{p}p \rightarrow \omega\pi^0$ |

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

| *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 $\overline{p}p \rightarrow 3\pi^0$, $\pi^0\eta$, $\pi^0\eta'$ |

**$\omega_3(2250)$** $I^G(J^{PC}) = 0^-(3^{--})$

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| 2250±20 | 200 ± 40 | ANISOVICH | 01C | SPEC | 0.6–1.9 $\overline{p}p \rightarrow \omega\eta$ |

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

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

**$h_1(2265)$** $I^G(J^{PC}) = 0^-(1^{+-})$

| *MASS* (MeV) | *WIDTH* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| 2270±15 | 150 ± 45 | ANISOVICH | 01C | SPEC | 0.6–1.9 $\overline{p}p \rightarrow \omega\eta$ |
| 2265±25 | 190 ± 35 | ANISOVICH | 00D | SPEC | |

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

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

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2265 \pm 20$ | $235^{+60}_{-35}$ | ANISOVICH | 99C | SPEC |
| $2280 \pm 30$ | $280 \pm 50$ | ANISOVICH | 99E | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2275 \pm 35$ | $180 \pm 35$ | ANISOVICH | 00D | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2300 \pm 20$ | $230 \pm 40$ | ANISOVICH | 99C | SPEC |
| $2260 \pm 15$ | $180 \pm 20$ | ANISOVICH | 99E | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2285 \pm 20$ | $325 \pm 30$ | ANISOVICH | 00J | SPEC |
| $2320 \pm 15$ | $230 \pm 35$ | [4] ANISOVICH | 00M | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $2280 \pm 50$ | $440 \pm 110$ | ATKINSON | 85 | OMEG | 20–70 $\gamma p \to p\omega\pi^+\pi^-\pi^0$ |

### $f_2(2300)$ $I^G(J^{PC}) = 0^+(2^{++})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2293 \pm 13$ | $216 \pm 37$ | ANISOVICH | 00J | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2303 \pm 15$ | $214 \pm 29$ | ANISOVICH | 00J | SPEC |

### $a_3(2310)$ $I^G(J^{PC}) = 1^-(3^{++})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2310 \pm 40$ | $180^{+120}_{-60}$ | ANISOVICH | 99C | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2310 \pm 60$ | $255 \pm 70$ | ANISOVICH | 00J | SPEC |

### $\eta_4(2320)$ $I^G(J^{PC}) = 0^+(4^{-+})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2328 \pm 38$ | $240 \pm 90$ | ANISOVICH | 00J | SPEC |

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

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

### $a_1(2340)$ $I^G(J^{PC}) = 1^-(1^{++})$

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN |
|---|---|---|---|---|
| $2340 \pm 40$ | $230 \pm 70$ | ANISOVICH | 99E | SPEC |

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

| MASS (MeV) | WIDTH (MeV) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|---|
| $2340 \pm 20$ | $180 \pm 60$ | 126 | [5] BALTAY | 75 | HBC | 15 $\pi^+ p \rightarrow p 5\pi$ |

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

| MASS (MeV) | WIDTH (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $2360 \pm 10$ | $430 \pm 30$ | 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 |
|---|---|---|---|---|---|
| $2440 \pm 10$ | $310 \pm 20$ | ROZANSKA | 80 | SPRK | 18 $\pi^- p \rightarrow p \overline{p} n$ |

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

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

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

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

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

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

**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 | $X(3250) \to \overline{\Lambda} p K^-$ |

**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 | $X(3250) \to \overline{\Lambda} p K^- \pi^\mp$ |
| 3270±8±20 | 25 ± 11 | ALEEV | 93 | BIS2 | $X(3250) \to K^0_S p \overline{p} K^\pm$ |

## FOOTNOTES for Further States

[1] Corrected for all decay modes.

[2] See SEMENOV 99 and KLOET 96.

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

[4] Combined fit along with data of ANISOVICH 00J.

[5] 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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