$X(1900–3600)$

OMITTED FROM SUMMARY TABLE

THE $X(1900–3600)$ REGION

This high-mass region is covered nearly continuously with evidence for peaks of various widths and decay modes. As no satisfactory grouping into particles is yet possible, we list together in order of increasing mass all the $Y=0$ bumps above 1900 MeV that are coupled neither to $\overline{N}N$ nor to e^+e^-.

$X(1900–3600)$ MASSES AND WIDTHS

We do not use the following data for averages, fits, limits, etc.

VALUE (MeV)	*DOCUMENT ID*
1900 to 3600 OUR LIMIT	

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1870 ± 40	[1] ALDE	86D	GAM4	0	100 $\pi^- p \rightarrow 2\eta X$
250 ± 30	[1] ALDE	86D	GAM4	0	100 $\pi^- p \rightarrow 2\eta X$

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1898 ± 18	100	THOMPSON	74	HBC	+	13 $\pi^+ p \rightarrow 2\rho X$
108^{+41}_{-27}	100	THOMPSON	74	HBC	+	13 $\pi^+ p \rightarrow 2\rho X$

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1900 ± 40	100	BOESEBECK	68	HBC	+	8 $\pi^+ p \rightarrow \pi^+\pi^0 X$
216 ± 105	100	BOESEBECK	68	HBC	+	8 $\pi^+ p \rightarrow \pi^+\pi^0 X$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1929 ± 14	[2] FOCACCI	66	MMS	−	3–12 $\pi^- p$
22 ± 2	[2] FOCACCI	66	MMS	−	3–12 $\pi^- p$

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

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

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2070	50	TAKAHASHI	72	HBC	8 $\pi^- p \rightarrow N2\pi$
160	50	TAKAHASHI	72	HBC	8 $\pi^- p \rightarrow N2\pi$

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
$\sim$ 2104		BUGG	95	MRK3		$J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$
2103 $\pm$ 50	586	[3] BISELLO	89B	DM2		$J/\psi \rightarrow 4\pi\gamma$
187 $\pm$ 75	586	[3] BISELLO	89B	DM2		$J/\psi \rightarrow 4\pi\gamma$
2100 $\pm$ 40		[4] ALDE	86D	GAM4	0	100 $\pi^- p \rightarrow 2\eta X$
250 $\pm$ 40		[4] ALDE	86D	GAM4	0	100 $\pi^- p \rightarrow 2\eta X$

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2141 $\pm$ 12	389	GREEN	86	MPSF	400 $pA \rightarrow 4KX$
49 $\pm$ 28	389	GREEN	86	MPSF	400 $pA \rightarrow 4KX$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2190 $\pm$ 10	CLAYTON	67	HBC	$\pm$	2.5 $\overline{p}p \rightarrow a_2, \omega$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2195 $\pm$ 15	[2] FOCACCI	66	MMS	$-$	3–12 $\pi^- p$
39 $\pm$ 14	[2] FOCACCI	66	MMS	$-$	3–12 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2207 $\pm$ 22	[5] CASO	70	HBC	$-$	11.2 $\pi^- p$
130	[5] CASO	70	HBC	$-$	11.2 $\pi^- p$

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

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2300 $\pm$ 100	ATKINSON	84F	OMEG	± 0	20–70 $\gamma p \rightarrow \rho f$
$\sim$ 250	ATKINSON	84F	OMEG	± 0	20–70 $\gamma p \rightarrow \rho f$

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

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2340 $\pm$ 20	126	[6] BALTAY	75	HBC	+	15 $\pi^+ p \rightarrow p5\pi$
180 $\pm$ 60	126	[6] BALTAY	75	HBC	+	15 $\pi^+ p \rightarrow p5\pi$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2382 $\pm$ 24	[2] FOCACCI	66	MMS	$-$	3–12 $\pi^- p$
62 $\pm$ 6	[2] FOCACCI	66	MMS	$-$	3–12 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2500 ± 32	ANDERSON	69	MMS	–	16 $\pi^- p$ backward
87	ANDERSON	69	MMS	–	16 $\pi^- p$ backward

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2620 ± 20	550	BAUD	69	MMS	–	8–10 $\pi^- p$
85 ± 30	550	BAUD	69	MMS	–	8–10 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2676 ± 27	[5] CASO	70	HBC	–	11.2 $\pi^- p$
150	[5] CASO	70	HBC	–	11.2 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2747 ± 32	DENNEY	83	LASS	10 $\pi^+ N$
195 ± 75	DENNEY	83	LASS	10 $\pi^+ N$

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2800 ± 20	640	BAUD	69	MMS	–	8–10 $\pi^- p$
46 ± 10	640	BAUD	69	MMS	–	8–10 $\pi^- p$

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2820 ± 10	15	[7] SABAU	71	HBC	+	8 $\pi^+ p$
50 ± 10	15	[7] SABAU	71	HBC	+	8 $\pi^+ p$

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
2880 ± 20	230	BAUD	69	MMS	–	8–10 $\pi^- p$
< 15	230	BAUD	69	MMS	–	8–10 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
3025 ± 20	BAUD	70	MMS	–	10.5–13 $\pi^- p$
~ 25	BAUD	70	MMS	–	10.5–13 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
3075 ± 20	BAUD	70	MMS	–	10.5–13 $\pi^- p$
~ 25	BAUD	70	MMS	–	10.5–13 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
3145 ± 20	BAUD	70	MMS	–	10.5–15 $\pi^- p$
< 10	BAUD	70	MMS	–	10.5–15 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
3475 ± 20	BAUD	70	MMS	–	14–15.5 $\pi^- p$
~ 30	BAUD	70	MMS	–	14–15.5 $\pi^- p$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
3535 ± 20	BAUD	70	MMS	–	14–15.5 $\pi^- p$
~ 30	BAUD	70	MMS	–	14–15.5 $\pi^- p$

[1] Seen in $J = 2$ wave in one of the two ambiguous solutions.
[2] Not seen by ANTIPOV 72, who performed a similar experiment at 25 and 40 GeV/c.
[3] ASTON 81B sees no peak, has 850 events in Ajinenko+Barth bins. ARESTOV 80 sees no peak.
[4] Seen in $J = 0$ wave in one of the two ambiguous solutions.
[5] Seen in $\rho^- \pi^+ \pi^-$ (ω and η antiselected in 4π system).
[6] 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 $2\rho^+ \pi^-$.
[7] Seen in ($K \overline{K} \pi \pi$) mass distribution.

X(1900–3600) REFERENCES

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BISELLO	89B	PR D39 701	G. Busetto *et al.*	(DM2 Collab.)
ATKINSON	88	ZPHY C38 535	M. Atkinson *et al.*	(BONN, CERN, GLAS+)
ALDE	86D	NP B269 485	D.M. Alde *et al.*	(BELG, LAPP, SERP, CERN+)
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+)
ATKINSON	84F	NP B239 1	M. Atkinson *et al.*	(BONN, CERN, GLAS+)
DENNEY	83	PR D28 2726	D.L. Denney *et al.*	(IOWA, MICH) J
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)
BALTAY	78	PR D17 52	C. Baltay *et al.*	(COLU, BING)
BALTAY	75	PRL 35 891	C. Baltay *et al.*	(COLU, BING)
THOMPSON	74	NP B69 220	G. Thompson *et al.*	(PURD)
ANTIPOV	72	PL 40 147	Y.M. Antipov *et al.*	(SERP)
TAKAHASHI	72	PR D6 1266	K. Takahashi *et al.*	(TOHOK, PENN, NDAM+)
SABAU	71	LNC 1 514	M. Sabeu, J.L. Uretsky	(BUCH, ANL)
BAUD	70	PL 31B 549	R. Baud *et al.*	
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