CITATION: R.M. Barnett *et al.* Physical Review D54, 1 (1996) and 1997 off-year partial update for the 1998 edition (URL: http://pdg.lbl.gov)

$X(1900\text{–}3600)$

OMITTED FROM SUMMARY TABLE

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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 $\pi^- p \to 2\eta X$
250 ± 30	[1] ALDE	86D	GAM4	0	100 $\pi^- p \to 2\eta X$

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

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

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 $K^+ p \to 2K^0_S 2\pi X$
40 ± 20	CHLIAPNIK...	80	HBC	0	32 $K^+ p \to 2K^0_S 2\pi X$

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

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2070	50	TAKAHASHI	72	HBC	8 $\pi^- p \to N 2\pi$
160	50	TAKAHASHI	72	HBC	8 $\pi^- p \to N 2\pi$

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

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

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2190 ± 10	CLAYTON	67	HBC	$\pm$	$2.5\ \overline{p}p \rightarrow a_2, \omega$

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

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
2207 ± 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 ± 110	ATKINSON	85	OMEG	20–70 $\gamma p \rightarrow p\omega\pi^+\pi^-\pi^0$

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
2300 ± 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 ± 30	ATKINSON	88	OMEG	0	25–50 $\gamma p \rightarrow \rho^\pm\rho^0\pi^\mp$
435 ± 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 ± 20	126	[6] BALTAY	75	HBC	$+$	15 $\pi^+ p \rightarrow p5\pi$
180 ± 60	126	[6] BALTAY	75	HBC	$+$	15 $\pi^+ p \rightarrow p5\pi$

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
2382 ± 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 $\pi^- p$
$\sim$ 25	BAUD	70	MMS	−	10.5–13 $\pi^- p$

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

BUGG	95	PL B353 378	+Scott, Zoli+	(LOQM, PNPI, WASH)
BISELLO	89B	PR D39 701	Busetto+	(DM2 Collab.)
ATKINSON	88	ZPHY C38 535	+Axon+	(BONN, CERN, GLAS, LANC, MCHS, CURIN)
ALDE	86D	NP B269 485	+Binon, Bricman+	(BELG, LAPP, SERP, CERN, LANL)
GREEN	86	PRL 56 1639	+Lai+	(FNAL, ARIZ, FSU, NDAM, TUFTS, VAND+)
ATKINSON	85	ZPHY C29 333	+	(BONN, CERN, GLAS, LANC, MCHS, IPNP+)
ATKINSON	84F	NP B239 1	+	(BONN, CERN, GLAS, LANC, MCHS, IPNP+)
DENNEY	83	PR D28 2726	+Cranley, Firestone, Chapman+	(IOWA, MICH) J
ASTON	81B	NP B189 205	+	(BONN, CERN, EPOL, GLAS, LANC, MCHS+)
ARESTOV	80	IHEP 80-165	+Bogoljubski+	(SERP)
CHLIAPNIK...	80	ZPHY C3 285	Chliapnikov, Gerdyukov+	(SERP, BRUX, MONS)
BALTAY	78	PR D17 52	+Cautis, Cohen, Csorna, Kalelkar+	(COLU, BING)
BALTAY	75	PRL 35 891	+Cautis, Cohen, Kalelkar, Pisello+	(COLU, BING)
THOMPSON	74	NP B69 220	+Gaidos, McIlwain, Miller, Mulera+	(PURD)
ANTIPOV	72	PL 40 147	+Kienzle, Landsberg+	(SERP)
TAKAHASHI	72	PR D6 1266	+Barish+	(TOHOK, PENN, NDAM, ANL)
SABAU	71	LNC 1 514	+Uretsky	(BUCH, ANL)
BAUD	70	PL 31B 549	+Benz+	(CERN Boson Spectrometer Collab.)
CASO	70	LNC 3 707	+Conte, Tomasini+	(GENO, HAMB, MILA, SACL)
ANDERSON	69	PRL 22 1390	+Collins+	(BNL, CMU)
BAUD	69	PL 30B 129	+Benz+	(CERN Boson Spectrometer Collab.)
BOESEBECK	68	NP B4 501	+Deutschmann+	(AACH, BERL, CERN)
CLAYTON	67	Heidelberg Conf. 57	+Mason, Muirhead, Filippas+	(LIVP, ATHU)
FOCACCI	66	PRL 17 890	+Kienzle, Levrat, Maglich, Martin	(CERN)

OTHER RELATED PAPERS

ANTIPOV	72	PL 40 147	+Kienzle, Landsberg+	(SERP)
CHIKOVANI	66	PL 22 233	+Kienzle, Maglich+	(SERP)