$f_2(2150)$ REFERENCES

ARMSTRONG	93C	PL B307 394	+Bettoni+	(FNAL, FERR, GENO, UCI, NWES+)
PROKOSHKIN	90	Hadron 89 Conf. p 27		(SERP, BELG, LANL, LAPP, PISA, KEK)
MARTIN	80B	NP B176 355	+Morgan	(LOUC, RHEL) JP
MARTIN	80C	NP B169 216	+Pennington	(DURH) JP
CUTTS	78B	PR D17 16	+Good, Grannis, Green, Lee+	(STON, WISC)
DULUDE	78B	PL 79B 335	+Lanou, Massimo, Peaslee+	(BROW, MIT, BARI) JP
COUPLAND	77	PL 71B 460	+Eisenhandler, Gibson, Astbury+	(LOQM, RHEL)
ALSPECTOR	73	PRL 30 511	+Cohen, Cvijanovich+	(RUTG, UPNJ)

OTHER RELATED PAPERS

FIELDS	71	PRL 27 1749	+Cooper, Rhines, Allison	(ANL, OXF)
YOH	71	PRL 26 922	+Barish, Caroll, Lobkowicz+	(CIT, BNL, ROCH)

$\rho(2150)$

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

OMITTED FROM SUMMARY TABLE

This entry was previously called $T_1(2190)$.

Our latest mini-review on this particle can be found in the 1984 edition.

$\rho(2150)$ MASS

$\overline{p}p \to \pi\pi$

VALUE (MeV)	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
~ 2170.0	[2] MARTIN	80B	RVUE
~ 2100.0	[2] MARTIN	80C	RVUE

S-CHANNEL $\overline{N}N$

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
~ 2190.0	[3] CUTTS	78B	CNTR		0.97–3 $\overline{p}p \to \overline{N}N$
2155.0±15.0	[3,4] COUPLAND	77	CNTR	0	0.7–2.4 $\overline{p}p \to \overline{p}p$
2193 ± 2	[3,5] ALSPECTOR	73	CNTR		$\overline{p}p$ S channel
2190 ±10	[6] ABRAMS	70	CNTR		S channel $\overline{p}N$

$e^+e^- \to \pi^+\pi^-, K^+K^-, 6\pi$

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2153±37	BIAGINI	91	RVUE		$e^+e^- \to \pi^+\pi^-, K^+K^-$
2110±50	[1] CLEGG	90	RVUE	0	$e^+e^- \to 3(\pi^+\pi^-), 2(\pi^+\pi^-\pi^0)$

[1] Includes ATKINSON 85.
[2] $I(J^P) = 1(1^-)$ from simultaneous analysis of $p\overline{p} \to \pi^-\pi^+$ and $\pi^0\pi^0$.
[3] Isospins 0 and 1 not separated.
[4] From a fit to the total elastic cross section.
[5] Referred to as T or T region by ALSPECTOR 73.
[6] Seen as bump in $I = 1$ state. See also COOPER 68. PEASLEE 75 confirm $\overline{p}p$ results of ABRAMS 70, no narrow structure.

$\rho(2150)$ WIDTH

$\overline{p}p \to \pi\pi$

VALUE (MeV)	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
~ 250.0	[8] MARTIN	80B	RVUE
~ 200.0	[8] MARTIN	80C	RVUE

S-CHANNEL $\overline{N}N$

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
135.0±75.0	[9,10] COUPLAND	77	CNTR	0	0.7–2.4 $\overline{p}p \to \overline{p}p$
98 ± 8	[10] ALSPECTOR	73	CNTR		$\overline{p}p$ S channel
~ 85	[11] ABRAMS	70	CNTR		S channel $\overline{p}N$

$e^+e^- \to \pi^+\pi^-, K^+K^-, 6\pi$

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
389± 79	BIAGINI	91	RVUE		$e^+e^- \to \pi^+\pi^-, K^+K^-$
410±100	[7] CLEGG	90	RVUE	0	$e^+e^- \to 3(\pi^+\pi^-), 2(\pi^+\pi^-\pi^0)$

[7] Includes ATKINSON 85.
[8] $I(J^P) = 1(1^-)$ from simultaneous analysis of $p\overline{p} \to \pi^-\pi^+$ and $\pi^0\pi^0$.
[9] From a fit to the total elastic cross section.
[10] Isospins 0 and 1 not separated.
[11] Seen as bump in $I = 1$ state. See also COOPER 68. PEASLEE 75 confirm $\overline{p}p$ results of ABRAMS 70, no narrow structure.

$\rho(2150)$ REFERENCES

BIAGINI	91	NC 104A 363	+Dubnicka+	(FRAS, PRAG)
CLEGG	90	ZPHY C45 677	+Donnachie	(LANC, MCHS)
ATKINSON	85	ZPHY C29 333	+	(BONN, CERN, GLAS, LANC, MCHS, IPNP+)
MARTIN	80B	NP B176 355	+Morgan	(LOUC, RHEL) JP
MARTIN	80C	NP B169 216	+Pennington	(DURH) JP
CUTTS	78B	PR D17 16	+Good, Grannis, Green, Lee+	(STON, WISC)
COUPLAND	77	PL 71B 460	+Eisenhandler, Gibson, Astbury+	(LOQM, RHEL)
PEASLEE	75	PL 57B 189	+Demarzo, Guerriero+	(CANB, BARI, BROW, MIT)
ALSPECTOR	73	PRL 30 511	+Cohen, Cvijanovich+	(RUTG, UPNJ)
ABRAMS	70	PR D1 1917	+Cool, Giacomelli, Kycia, Leontic, Li+	(BNL)
COOPER	68	PRL 20 1059	+Hyman, Manner, Musgrave+	(ANL)

OTHER RELATED PAPERS

BRICMAN	69	PL 29B 451	+Ferro-Luzzi, Bizard+	(CERN, CAEN, SACL)
ABRAMS	67C	PRL 18 1209	+Cool, Giacomelli, Kycia, Leontic, Li+	(BNL)

$X(2200)$

$I^G(J^{PC}) = ?^?(\text{even}^{++})$

OMITTED FROM SUMMARY TABLE

Seen at DCI in the $K^0_S K^0_S$ system. Not seen in Υ radiative decays (BARU 89). Needs confirmation.

$X(2200)$ MASS

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
2197±17	AUGUSTIN	88	DM2	0	$J/\psi \to \gamma K^0_S K^0_S$

$X(2200)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
201±51	AUGUSTIN	88	DM2	0	$J/\psi \to \gamma K^0_S K^0_S$

$X(2200)$ REFERENCES

BARU	89	ZPHY C42 505	+Beilin, Blinov+	(NOVO)
AUGUSTIN	88	PRL 60 2238	+Calcaterra+	(DM2 Collab.)

$\rho(2210)$

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

OMITTED FROM SUMMARY TABLE

Seen in one-pion exchange production of the $\omega\pi^0$ system and diffractive photoproduction of the $\omega\pi^+\pi^-\pi^0$ system. Needs confirmation.

$\rho(2210)$ MASS

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
2212±22 OUR AVERAGE	Error includes scale factor of 1.4. See the ideogram below.			
2220±20	ALDE	92C	GAM2	38 $\pi^-p \to n\omega\pi^0$
2170±30	ALDE	92C	GAM4	100 $\pi^-p \to n\omega\pi^0$
2280±50	ATKINSON	85	OMEG	20–70 $\gamma p \to p\omega\pi^+\pi^-\pi^0$