$\rho(2210)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
286± 80 OUR AVERAGE	Error includes scale factor of 1.6.			
240± 60	ALDE	92C	GAM2	38 $\pi^- p \to n\omega\pi^0$
~ 300	ALDE	92C	GAM4	100 $\pi^- p \to n\omega\pi^0$
440±110	ATKINSON	85	OMEG	20–70 $\gamma p \to p\omega\pi^+\pi^-\pi^0$

$\rho(2210)$ REFERENCES

ALDE	92C	ZPHY C54 553	+Bellazzini+	(SERP, BELG, LANL, LAPP, PISA, KEK)
ATKINSON	85	ZPHY C29 333	+	(BONN, CERN, GLAS, LANC, MCHS, IPNP+)

$f_4(2220)$
was $\xi(2220)$

$I^G(J^{PC}) = 0^+(4^{++})$

OMITTED FROM SUMMARY TABLE

This state has been seen at SPEAR in the $K\overline{K}$ systems (K^+K^- and $K^0_S K^0_S$) produced in the radiative decay of $J/\psi(1S)$. Seen in $\eta\eta'$ (ALDE 86B), in $K^0_S K^0_S$ (ASTON 88D), and in K^+K^- (ASTON 88F). Needs confirmation. Also J needs confirmation. Not seen in Υ radiative decays nor in B inclusive decay (BEHRENDS 84). Not seen in $\overline{p}p \to K^+K^-$ formation experiment (BARDIN 87,SCULLI 87) and $\overline{p}p \to K^0_S K^0_S$ formation experiment (BARNES 93). Not seen at DCI in either K^+K^- or $K^0_S K^0_S$ systems (AUGUSTIN 88).

$f_4(2220)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
2225± 6 OUR AVERAGE					
$2209^{+17}_{-15}\pm10$		ASTON	88F	LASS	11 $K^- p \to K^+K^-\Lambda$
2230±20		BOLONKIN	88	SPEC	40 $\pi^- p \to K^0_S K^0_S n$
2220±10	41	ALDE	86B	GAM4	38–100 $\pi p \to n\eta\eta'$
2230± 6±14	93	BALTRUSAIT...86D		MRK3	$e^+e^- \to \gamma K^+K^-$
2232± 7± 7	23	BALTRUSAIT...86D		MRK3	$e^+e^- \to \gamma K^0_S K^0_S$

$f_4(2220)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{38^{+15}_{-13}}$ **OUR AVERAGE**					
60^{+107}_{-57}		ASTON	88F	LASS	11 $K^- p \to K^+K^-\Lambda$
80± 30		BOLONKIN	88	SPEC	40 $\pi^- p \to K^0_S K^0_S n$
$26^{+20}_{-16}\pm17$	93	BALTRUSAIT...86D		MRK3	$e^+e^- \to \gamma K^+K^-$
$18^{+23}_{-15}\pm10$	23	BALTRUSAIT...86D		MRK3	$e^+e^- \to \gamma K^0_S K^0_S$

$f_4(2220)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Confidence level
Γ_1	$K\overline{K}$		
Γ_2	$p\overline{p}$	$<1.1\times10^{-3}$	99.7%
Γ_3	$\gamma\gamma$		
Γ_4	$\eta\eta'(958)$		

$f_4(2220)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(K\overline{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_1\Gamma_3/\Gamma$

VALUE (keV)	CL%	DOCUMENT ID		TECN	COMMENT
<0.086	95	[1] ALBRECHT	90G	ARG	$\gamma\gamma \to K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.0	95	[2] ALTHOFF	85B	TASS	$\gamma\gamma$, $K\overline{K}\pi$

[1] Assuming $J^P = 2^+$.
[2] True for $J^P = 0^+$ and $J^P = 2^+$.

$f_4(2220)$ BRANCHING RATIOS

$\Gamma(p\overline{p})/\Gamma_{\text{total}}$ Γ_2/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<1.1	99.7	[3] BARNES	93	SPEC	1.3-1.57$\overline{p}p \to K^0_S K^0_S$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2.6	99.7	[3] BARDIN	87	CNTR	1.3-1.5$\overline{p}p \to K^+K^-$
<3.6	99.7	[3] SCULLI	87	CNTR	1.29-1.55$\overline{p}p \to K^+K^-$

[3] Assuming Γ = 30-35 MeV, $J^P = 2^+$ and B($f_4(2220) \to K\overline{K}$) = 10%.

$f_4(2220)$ REFERENCES

BARNES	93	PL B309 469	+Birien, Breunlich	(PS185 Collab.)
ALBRECHT	90G	ZPHY C48 183	+Ehrlichmann, Harder+	(ARGUS Collab.)
ASTON	88D	NP B301 525	+Awaji, Bienz+	(SLAC, NAGO, CINC, INUS)
ASTON	88F	PL B215 199	+Awaji+	(SLAC, NAGO, CINC, INUS) JP
AUGUSTIN	88	PRL 60 2238	+Calcaterra+	(DM2 Collab.)
BOLONKIN	88	NP B309 426	+Bloshenko, Gorin+	(ITEP, SERP)
BARDIN	87	PL B195 292	+Burgun+	(SACL, FERR, CERN, PADO, TORI)
SCULLI	87	PRL 58 1715	+Christenson, Kreiter, Nemethy, Yamin	(NYU, BNL)
ALDE	86B	PL B177 120	+Binon, Bricman+	(SERP, BELG, LANL, LAPP)
BALTRUSAIT...	86D	PRL 56 107	Baltrusaitis	(CIT, UCSC, ILL, SLAC, WASH)
ALTHOFF	85B	ZPHY C29 189	+Braunschweig, Kirschfink+	(TASSO Collab.)
BEHRENDS	84	PL 137B 277	+Chadwich, Chauveau, Gentile+	(CLEO Collab.)

OTHER RELATED PAPERS

BARDIN	87	PL B195 292	+Burgun+	(SACL, FERR, CERN, PADO, TORI)
YAOUANC	85	ZPHY C28 309	+Oliver, Pene, Raynal, Ono	(ORSAY, TOKY)
GODFREY	84	PL 141B 439	+Kokoski, Isgur	(TNTO)
SHATZ	84	PL 138B 209		(CIT)
WILLEY	84	PRL 52 585		(PITT)
EINSWEILER	83	Brighton Conf. 348		(Mark III Collab.)
HITLIN	83	Cornell Conf. 746		(CIT)

$\eta(2225)$

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

OMITTED FROM SUMMARY TABLE

Seen in $J/\psi \to \gamma\phi\phi$. Needs confirmation.

$\eta(2225)$ MASS

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2230±25±15	BAI	90B	MRK3	$J/\psi \to \gamma K^+K^-K^+K^-$
2214±20±13	BAI	90B	MRK3	$J/\psi \to \gamma K^+K^-K^0_S K^0_L$
~ 2220	BISELLO	86B	DM2	$J/\psi \to \gamma K^+K^-K^+K^-$

$\eta(2225)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
$\mathbf{150^{+300}_{-60}\pm60}$	BAI	90B	MRK3	$J/\psi \to \gamma K^+K^-K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
~ 80	BISELLO	86B	DM2	$J/\psi \to \gamma K^+K^-K^+K^-$

$\eta(2225)$ REFERENCES

BAI	90B	PRL 65 1309	+Blaylock+	(Mark III Collab.)
BISELLO	86B	PL B179 294	+Busetto, Castro, Limentani+	(DM2 Collab.)