OTHER RELATED PAPERS

BERLINGHIERI	67	PRL 18 1087	+Farber, Ferbel, Forman	(ROCH) I
CARMONY	67	PRL 18 615	+Hendricks, Lander	(UCSD)
JOBES	67	PL 26B 49	+Bassompierre, DeBaere+	(BIRM, CERN, BRUX)
BARTSCH	66	PL 22 357	+Deutschmann+	(AACH, BERL, CERN+)

$K_3^*(1780)$

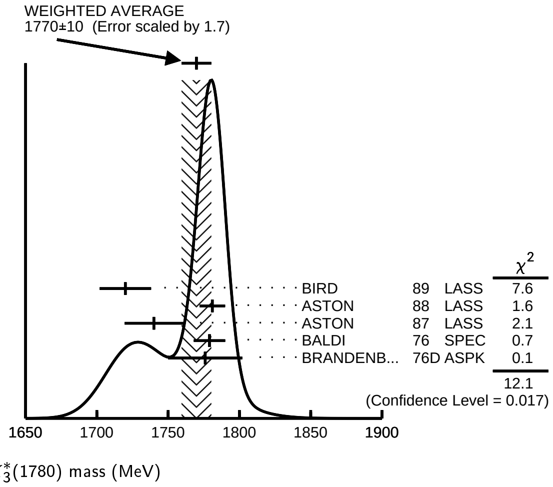
$I(J^P) = \frac{1}{2}(3^-)$

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

$K_3^*(1780)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1770 ±10 OUR AVERAGE		Error includes scale factor of 1.7. See the ideogram below.				
1720 ±10 ±15	6111±780	[1] BIRD	89	LASS	−	11 $K^- p \to \overline{K}^0 \pi^- p$
1781 ± 8 ± 4		[2] ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
1740 ±14 ±15		[2] ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
1779.0±11.0		[3] BALDI	76	SPEC	+	10 $K^+ p \to K^0 \pi^+ p$
1776 ±26		[4] BRANDENB...	76D	ASPK	0	13 $K^\pm p \to K^\pm \pi^\mp N$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1749 ±10		ASTON	88B	LASS	−	11 $K^- p \to K^- \eta p$
1780.0± 9.0	300	BAUBILLIER	84B	HBC	−	8.25 $K^- p \to \overline{K}^0 \pi^- p$
1790.0±15.0		BAUBILLIER	82B	HBC	0	8.25 $K^- p \to K_S^0 2\pi N$
1784.0± 9.0	2060	CLELAND	82	SPEC	±	50 $K^+ p \to K_S^0 \pi^\pm p$
1786 ±15		[5] ASTON	81D	LASS	0	11 $K^- p \to K^- \pi^+ n$
1762.0± 9.0	190	TOAFF	81	HBC	−	6.5 $K^- p \to \overline{K}^0 \pi^- p$
1850 ±50		ETKIN	80	MPS	0	6 $K^- p \to \overline{K}^0 \pi^+ \pi^-$
1812.0±28.0		BEUSCH	78	OMEG		10 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
1786.0± 8.0		CHUNG	78	MPS	0	6 $K^- p \to K^- \pi^+ n$

[1] From a partial wave amplitude analysis.
[2] From energy-independent partial-wave analysis.
[3] From a fit to Y_6^2 moment. $J^P = 3^-$ found.
[4] Confirmed by phase shift analysis of ESTABROOKS 78, yields $J^P = 3^-$.
[5] From a fit to the Y_6^0 moment.



$K_3^*(1780)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
164 ±17 OUR AVERAGE		Error includes scale factor of 1.1.				
187 ±31 ±20	6111±780	[6] BIRD	89	LASS	−	11 $K^- p \to \overline{K}^0 \pi^- p$
203 ±30 ± 8		[7] ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
171 ±42 ±20		[7] ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
135.0±22.0		[8] BALDI	76	SPEC	+	10 $K^+ p \to K^0 \pi^+ p$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
193 $^{+51}_{-37}$		ASTON	88B	LASS	−	11 $K^- p \to K^- \eta p$
99.0±30.0	300	BAUBILLIER	84B	HBC	−	8.25 $K^- p \to \overline{K}^0 \pi^- p$
~ 130.0		BAUBILLIER	82B	HBC	0	8.25 $K^- p \to K_S^0 2\pi N$
191.0±24.0	2060	CLELAND	82	SPEC	±	50 $K^+ p \to K_S^0 \pi^\pm p$
225 ±60		[9] ASTON	81D	LASS	0	11 $K^- p \to K^- \pi^+ n$
~ 80	190	TOAFF	81	HBC	−	6.5 $K^- p \to \overline{K}^0 \pi^- p$
240 ±50		ETKIN	80	MPS	0	6 $K^- p \to \overline{K}^0 \pi^+ \pi^-$
181.0±44.0		[10] BEUSCH	78	OMEG		10 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
96.0±31.0		CHUNG	78	MPS	0	6 $K^- p \to K^- \pi^+ n$
270 ±70		[11] BRANDENB...	76D	ASPK	0	13 $K^\pm p \to K^\pm \pi^\mp N$

[6] From a partial wave amplitude analysis.
[7] From energy-independent partial-wave analysis.
[8] From a fit to Y_6^2 moment. $J^P = 3^-$ found.
[9] From a fit to Y_6^0 moment.
[10] Errors enlarged by us to $4\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass.
[11] ESTABROOKS 78 find that BRANDENBURG 76D data are consistent with 175 MeV width. Not averaged.

$K_3^*(1780)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1	$K\rho$	(45 ±4) %	S=1.4
Γ_2	$K^*(892)\pi$	(27.3±3.2) %	S=1.5
Γ_3	$K\pi$	(19.3±1.0) %	
Γ_4	$K\eta$	(8.0±1.5) %	S=1.4
Γ_5	$K_2^*(1430)\pi$	< 21 %	CL=95%

CONSTRAINED FIT INFORMATION

An overall fit to 4 branching ratios uses 5 measurements and one constraint to determine 4 parameters. The overall fit has a $\chi^2 =$ 2.2 for 2 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle/(\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_2	−84		
x_3	−33	−4	
x_4	−35	−14	26
	x_1	x_2	x_3

$K_3^*(1780)$ BRANCHING RATIOS

$\Gamma(K\rho)/\Gamma(K^*(892)\pi)$ — Γ_1/Γ_2

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
1.66±0.31 OUR FIT	Error includes scale factor of 1.5.				
1.52±0.21±0.10	ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$

$\Gamma(K^*(892)\pi)/\Gamma(K\pi)$ — Γ_2/Γ_3

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
1.42±0.19 OUR FIT	Error includes scale factor of 1.4.				
1.09±0.26	ASTON	84B	LASS	0	11 $K^- p \to \overline{K}^0 2\pi n$

$\Gamma(K\pi)/\Gamma_{\text{total}}$ — Γ_3/Γ

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.193±0.010 OUR FIT					
0.188±0.010 OUR AVERAGE					
0.187±0.008±0.008	ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
0.19 ±0.02	ESTABROOKS	78	ASPK	0	13 $K^\pm p \to K\pi N$

$\Gamma(K\eta)/\Gamma(K\pi)$ — Γ_4/Γ_3

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.41±0.07 OUR FIT	Error includes scale factor of 1.5.				
0.41±0.050	[12] BIRD	89	LASS	−	11 $K^- p \to \overline{K}^0 \pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.50±0.18	ASTON	88B	LASS	−	11 $K^- p \to K^- \eta p$

[12] This result supersedes ASTON 88B.

$\Gamma(K_2^*(1430)\pi)/\Gamma(K^*(892)\pi)$ — Γ_5/Γ_2

VALUE	CL%	DOCUMENT ID		TECN	CHG	COMMENT
<0.78	95	ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$