$K_0^*(1430)$

$I(J^P) = \frac{1}{2}(0^+)$

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

$K_0^*(1430)$ MASS

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
1429 ±4±5	[1] ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
∼ 1430	BAUBILLIER	84B	HBC	−	8.25 $K^- p \to \overline{K}^0 \pi^- p$
∼ 1425	[2,3] ESTABROOKS	78	ASPK		13 $K^\pm p \to K^\pm \pi^\pm (n,\Delta)$
∼ 1450.0	MARTIN	78	SPEC		10 $K^\pm p \to K_S^0 \pi p$

[1] Uses a model for the background, without this background they get a mass 1340 MeV, where the phase shift passes 90°.
[2] Mass defined by pole position.
[3] From elastic $K\pi$ partial-wave analysis.

$K_0^*(1430)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
287±10±21	ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
∼ 200	BAUBILLIER	84B	HBC	−	8.25 $K^- p \to \overline{K}^0 \pi^- p$
200 to 300	[4] ESTABROOKS	78	ASPK		13 $K^\pm p \to K^\pm \pi^\pm (n,\Delta)$

[4] From elastic $K\pi$ partial-wave analysis.

$K_0^*(1430)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$K\pi$	(93±10) %

$K_0^*(1430)$ BRANCHING RATIOS

$\Gamma(K\pi)/\Gamma_{total}$ Γ_1/Γ

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.93±0.04±0.09	ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$

$K_0^*(1430)$ REFERENCES

ASTON 88 NP B296 493 +Awaji, Bienz, Bird+ (SLAC, NAGO, CINC, INUS)
BAUBILLIER 84B ZPHY C26 37 + (BIRM, CERN, GLAS, MICH, CURIN)
ESTABROOKS 78 NP B133 490 +Carnegie+ (MCGI, CARL, DURH, SLAC)
MARTIN 78 NP B134 392 +Shimada, Baldi, Bohringer+ (DURH, GEVA)

OTHER RELATED PAPERS

TORNQVIST 82 PRL 49 624 (HELS)
GOLDBERG 69 PL 30B 434 +Huffer, Laloum+ (SABRE Collab.)
SCHLEIN 69 Argonne Conf. 446 (UCLA)
TRIPPE 68 PL 28B 203 +Chien, Malamud, Mellema, Schlein+ (UCLA)

$K_2^*(1430)$

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

We consider that phase-shift analyses provide more reliable determinations of the mass and width.

$K_2^*(1430)$ MASS

CHARGED ONLY, WITH FINAL STATE $K\pi$

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1425.4± 1.3 OUR AVERAGE	Error includes scale factor of 1.1.					
1423.4± 2 ±3	24809±820	[1] BIRD	89	LASS	−	11 $K^- p \to \overline{K}^0 \pi^- p$
1420 ± 4	1587	BAUBILLIER	84B	HBC	−	8.25 $K^- p \to \overline{K}^0 \pi^- p$
1436 ± 5.5	400	[2,3] CLELAND	82	SPEC	+	30 $K^+ p \to K_S^0 \pi^+ p$
1430 ± 3.2	1500	[2,3] CLELAND	82	SPEC	+	50 $K^+ p \to K_S^0 \pi^+ p$
1430 ± 3.2	1200	[2,3] CLELAND	82	SPEC	−	50 $K^+ p \to K_S^0 \pi^- p$
1423.0± 5.0	935	TOAFF	81	HBC	−	6.5 $K^- p \to \overline{K}^0 \pi^- p$
1428.0± 4.6		[4] MARTIN	78	SPEC	+	10 $K^\pm p \to K_S^0 \pi p$
1423.8± 4.6		[4] MARTIN	78	SPEC	−	10 $K^\pm p \to K_S^0 \pi p$
1420.0± 3.1	1400	AGUILAR-...	71B	HBC	−	3.9,4.6 $K^- p$
1425 ± 8.0	225	[2,3] BARNHAM	71C	HBC	+	$K^+ p \to K^0 \pi^+ p$
1416.0±10.0	220	CRENNELL	69D	DBC	−	3.9 $K^- N \to \overline{K}^0 \pi^- N$
1414 ±13.0	60	[2] LIND	69	HBC	+	9 $K^+ p \to K^0 \pi^+ p$
1427.0±12.0	63	[2] SCHWEING...	68	HBC	−	5.5 $K^- p \to \overline{K} \pi N$
1423 ±11.0	39	[2] BASSANO	67	HBC	−	4.6–5.0 $K^- p \to \overline{K}^0 \pi^- p$

NEUTRAL ONLY

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1432.4± 1.3 OUR AVERAGE						
1431.2± 1.8± 0.7		[5] ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
1434 ± 4 ± 6		[5] ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
1433 ± 6 ±10		[5] ASTON	84B	LASS	0	11 $K^- p \to \overline{K}^0 2\pi n$
1471 ±12		[5] BAUBILLIER	82B	HBC	0	8.25 $K^- p \to N K_S^0 \pi\pi$
1428 ± 3		[5] ASTON	81C	LASS	0	11 $K^- p \to K^- \pi^+ n$
1434.0± 2.0		[5] ESTABROOKS	78	ASPK	0	13 $K^\pm p \to p K\pi$
1440.0±10.0		[5] BOWLER	77	DBC	0	5.5 $K^+ d \to K\pi pp$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1420.0± 7.0	300	HENDRICK	76	DBC		8.25 $K^+ N \to K^+ \pi N$
1421.6± 4.2	800	MCCUBBIN	75	HBC	0	3.6 $K^- p \to K^- \pi^+ n$
1420.1± 4.3		[6] LINGLIN	73	HBC	0	2–13 $K^+ p \to K^+ \pi^- X$
1419.1± 3.7	1800	AGUILAR-...	71B	HBC	0	3.9,4.6 $K^- p$
1416 ± 6	600	CORDS	71	DBC	0	9 $K^+ n \to K^+ \pi^- p$
1421.1± 2.6	2200	DAVIS	69	HBC	0	12 $K^+ p \to K^+ \pi^- X$

[1] From a partial wave amplitude analysis.
[2] Errors enlarged by us to $\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass.
[3] Number of events in peak re-evaluated by us.
[4] Systematic error added by us.
[5] From phase shift or partial-wave analysis.
[6] From pole extrapolation, using world $K^+ p$ data summary tape.

$K_2^*(1430)$ WIDTH

CHARGED ONLY, WITH FINAL STATE $K\pi$

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
98.4± 2.3 OUR FIT						
98.4± 2.4 OUR AVERAGE						
98 ± 4 ±4	24809±820	[7] BIRD	89	LASS	−	11 $K^- p \to \overline{K}^0 \pi^- p$
109 ±22	400	[8,9] CLELAND	82	SPEC	+	30 $K^+ p \to K_S^0 \pi^+ p$
124 ±12.8	1500	[8,9] CLELAND	82	SPEC	+	50 $K^+ p \to K_S^0 \pi^+ p$
113 ±12.8	1200	[8,9] CLELAND	82	SPEC	−	50 $K^+ p \to K_S^0 \pi^- p$
85.0±16.0	935	TOAFF	81	HBC	−	6.5 $K^- p \to \overline{K}^0 \pi^- p$
96.5± 3.8		MARTIN	78	SPEC	+	10 $K^\pm p \to K_S^0 \pi p$
97.7± 4.0		MARTIN	78	SPEC	−	10 $K^\pm p \to K_S^0 \pi p$
$94.7^{+15.1}_{-12.5}$	1400	AGUILAR-...	71B	HBC	−	3.9,4.6 $K^- p$

NEUTRAL ONLY

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
109 ± 5 OUR AVERAGE	Error includes scale factor of 1.9. See the ideogram below.					
116.5± 3.6± 1.7		[10] ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
129 ±15 ±15		[10] ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
131 ±24 ±20		[10] ASTON	84B	LASS	0	11 $K^- p \to \overline{K}^0 2\pi n$
143 ±34		[10] BAUBILLIER	82B	HBC	0	8.25 $K^- p \to N K_S^0 \pi\pi$
98 ± 8		[10] ASTON	81C	LASS	0	11 $K^- p \to K^- \pi^+ n$
140 ±30		[10] ETKIN	80	SPEC	0	6 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
98.0± 5.0		[10] ESTABROOKS	78	ASPK	0	13 $K^\pm p \to p K\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
125.0±29.0	300	[8] HENDRICK	76	DBC		8.25 $K^+ N \to K^+ \pi N$
116 ±18	800	MCCUBBIN	75	HBC	0	3.6 $K^- p \to K^- \pi^+ n$
61.0±14.0		[11] LINGLIN	73	HBC	0	2–13 $K^+ p \to K^+ \pi^- X$
$116.6^{+10.3}_{-15.5}$	1800	AGUILAR-...	71B	HBC	0	3.9,4.6 $K^- p$
144 ±24.0	600	[8] CORDS	71	DBC	0	9 $K^+ n \to K^+ \pi^- p$
101 ±10	2200	DAVIS	69	HBC	0	12 $K^+ p \to K^+ \pi^- \pi^+ p$