$K_0^*(1430)$

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

See our minireview in the 1994 edition and in this edition under the $f_0(600)$.

$K_0^*(1430)$ MASS

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1425 ±50 OUR ESTIMATE						
• • • We do not use the following data for averages, fits, limits, etc. • • •						
~ 1412		[1] LINK	07	FOCS	0	$D^+ \to K^- K^+ \pi^+$
1461.0± 4.0± 2.1	54k	[2] LINK	07B	FOCS		$D^+ \to K^- \pi^+ \pi^+$
1406 ±29		[3] BUGG	06	RVUE		
1435 ± 6		[4] ZHOU	06	RVUE		$K p \to K^- \pi^+ n$
1455 ±20 ±15		ABLIKIM	05Q	BES2		$\psi(2S) \to \gamma \pi^+ \pi^- K^+ K^-$
1456 ± 8		[5] ZHENG	04	RVUE		$K^- p \to K^- \pi^+ n$
~ 1419		[6] BUGG	03	RVUE		11 $K^- p \to K^- \pi^+ n$
~ 1440		[7] LI	03	RVUE		11 $K^- p \to K^- \pi^+ n$
1459 ± 9	15k	[8] AITALA	02	E791		$D^+ \to K^- \pi^+ \pi^+$
~ 1440		[9] JAMIN	00	RVUE		$K p \to K p$
1436 ± 8		[10] BARBERIS	98E	OMEG		450 $p p \to p_f p_s K^+ K^- \pi^+ \pi^-$
1415 ±25		[6] ANISOVICH	97C	RVUE		11 $K^- p \to K^- \pi^+ n$
~ 1450		[11] TORNQVIST	96	RVUE		$\pi\pi \to \pi\pi$, $K\overline{K}$, $K\pi$
1412 ± 6		[12] ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
~ 1430		BAUBILLIER	84B	HBC	–	8.25 $K^- p \to \overline{K}^0 \pi^- p$
~ 1425		[13,14] ESTABROOKS	78	ASPK		13 $K^\pm p \to K^\pm \pi^\pm (n, \Delta)$
~ 1450.0		MARTIN	78	SPEC		10 $K^\pm p \to K^0_S \pi p$

[1] From a non-parametric analysis.
[2] A Breit-Wigner mass and width.
[3] S-matrix pole. Reanalysis of ASTON 88, AITALA 02, and ABLIKIM 06C including the κ with an s-dependent width and an Adler zero near threshold.
[4] S-matrix pole. Using ASTON 88 and assuming $K_0^*(800)$, $K_0^*(1950)$.
[5] Using ASTON 88 and assuming $K_0^*(800)$.
[6] T-matrix pole. Reanalysis of ASTON 88 data.
[7] Breit-Wigner fit. Using ASTON 88.
[8] Assuming a low-mass scalar $K\pi$ resonance, $\kappa(800)$.
[9] T-matrix pole. Using data from ESTABROOKS 78 and ASTON 88.
[10] J^P not determined, could be $K_2^*(1430)$.
[11] T-matrix pole.
[12] Uses a model for the background, without this background they get a mass 1340 MeV, where the phase shift passes 90°.
[13] Mass defined by pole position.
[14] From elastic $K\pi$ partial-wave analysis.

$K_0^*(1430)$ WIDTH

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
270 ±80 OUR ESTIMATE						
• • • We do not use the following data for averages, fits, limits, etc. • • •						
~ 500		[15] LINK	07	FOCS	0	$D^+ \to K^- K^+ \pi^+$
177.0± 8.0± 3.4	54k	[16] LINK	07B	FOCS		$D^+ \to K^- \pi^+ \pi^+$
350 ±40		[17] BUGG	06	RVUE		
288 ±22		[18] ZHOU	06	RVUE		$K p \to K^- \pi^+ n$
270 ±45 $^{+30}_{-35}$		ABLIKIM	05Q	BES2		$\psi(2S) \to \gamma \pi^+ \pi^- K^+ K^-$
217 ±31		[19] ZHENG	04	RVUE		$K^- p \to K^- \pi^+ n$
~ 316		[20] BUGG	03	RVUE		11 $K^- p \to K^- \pi^+ n$
~ 350		[21] LI	03	RVUE		11 $K^- p \to K^- \pi^+ n$
175 ±17	15k	[22] AITALA	02	E791		$D^+ \to K^- \pi^+ \pi^+$
~ 300		[23] JAMIN	00	RVUE		$K p \to K p$
196 ±45		[24] BARBERIS	98E	OMEG		450 $p p \to p_f p_s K^+ K^- \pi^+ \pi^-$
330 ±50		[20] ANISOVICH	97C	RVUE		11 $K^- p \to K^- \pi^+ n$
~ 320		[25] TORNQVIST	96	RVUE		$\pi\pi \to \pi\pi$, $K\overline{K}$, $K\pi$
294 ±23		ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
~ 200		BAUBILLIER	84B	HBC	−	8.25 $K^- p \to \overline{K}^0 \pi^- p$
200 to 300		[26] ESTABROOKS	78	ASPK		13 $K^\pm p \to K^\pm \pi^\pm (n, \Delta)$

[15] From a non-parametric analysis.
[16] A Breit-Wigner mass and width.
[17] S-matrix pole. Reanalysis of ASTON 88, AITALA 02, and ABLIKIM 06C including the κ with an s-dependent width and an Adler zero near threshold.
[18] S-matrix pole. Using ASTON 88 and assuming $K_0^*(800)$, $K_0^*(1950)$.
[19] Using ASTON 88 and assuming $K_0^*(800)$.
[20] T-matrix pole. Reanalysis of ASTON 88 data.
[21] Breit-Wigner fit. Using ASTON 88.
[22] Assuming a low-mass scalar $K\pi$ resonance, $\kappa(800)$.
[23] T-matrix pole. Using data from ESTABROOKS 78 and ASTON 88.
[24] J^P not determined, could be $K_2^*(1430)$.
[25] T-matrix pole.
[26] 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 $K^- p \rightarrow K^- \pi^+ n$

$K_0^*(1430)$ REFERENCES

LINK	07	PL B648 156	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	07B	PL B653 1	J.M. Link *et al.*	(FNAL FOCUS Collab.)
ABLIKIM	06C	PL B633 681	M. Ablikim *et al.*	(BES Collab.)
BUGG	06	PL B632 471	D.V. Bugg	(LOQM)
ZHOU	06	NP A775 212	Z.Y. Zhou, H.Q. Zheng	
ABLIKIM	05Q	PR D72 092002	M. Ablikim *et al.*	(BES Collab.)
ZHENG	04	NP A733 235	H.Q. Zheng *et al.*	
BUGG	03	PL B572 1	D.V. Bugg	
LI	03	PR D67 034025	L. Li, B. Zou, G. Li	
AITALA	02	PRL 89 121801	E.M. Aitala *et al.*	(FNAL E791 Collab.)
JAMIN	00	NP B587 331	M. Jamin *et al.*	
BARBERIS	98E	PL B436 204	D. Barberis *et al.*	(Omega Expt.)
ANISOVICH	97C	PL B413 137	A.V. Anisovich, A.V. Sarantsev	
TORNQVIST	96	PRL 76 1575	N.A. Tornqvist, M. Roos	(HELS)
ASTON	88	NP B296 493	D. Aston *et al.*	(SLAC, NAGO, CINC, INUS)
BAUBILLIER	84B	ZPHY C26 37	M. Baubillier *et al.*	(BIRM, CERN, GLAS+)
ESTABROOKS	78	NP B133 490	P.G. Estabrooks *et al.*	(MCGI, CARL, DURH+)
MARTIN	78	NP B134 392	A.D. Martin *et al.*	(DURH, GEVA)

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BUGG	05A	EPJ A25 107	D.V. Bugg	(LOQM)
Also		EPJ A26 151 (erratum)	D.V. Bugg	(LOQM)
BUGG	05B	EPJ A26 151 (erratum)	D.V. Bugg	(LOQM)
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VANBEVEREN	99	EPJ C10 469	E. van Beveren, G. Rupp	
TORNQVIST	82	PRL 49 624	N.A. Tornqvist	(HELS)
GOLDBERG	69	PL 30B 434	J. Goldberg *et al.*	(SABRE Collab.)
TRIPPE	68	PL 28B 203	T.G. Trippe *et al.*	(UCLA)