$K_0^*(1430)$

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

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. • • •					
1427 ± 4 ±13		[1] BUGG 10	RVUE		S-matrix pole
1466.6± 0.7± 3.4	141k	[2] BONVICINI 08A	CLEO		$D^+ \to K^- \pi^+ \pi^+$
~ 1412		[3] LINK 07	FOCS	0	$D^+ \to K^- K^+ \pi^+$
1461.0± 4.0± 2.1	54k	[4] LINK 07B	FOCS		$D^+ \to K^- \pi^+ \pi^+$
1406 ±29		[5] BUGG 06	RVUE		
1435 ± 6		[6] 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		[7] ZHENG 04	RVUE		$K^- p \to K^- \pi^+ n$
~ 1419		[8] BUGG 03	RVUE		11 $K^- p \to K^- \pi^+ n$
~ 1440		[9] LI 03	RVUE		11 $K^- p \to K^- \pi^+ n$
1459 ± 9	15k	[10] AITALA 02	E791		$D^+ \to K^- \pi^+ \pi^+$
~ 1440		[11] JAMIN 00	RVUE		$K p \to K p$
1436 ± 8		[12] BARBERIS 98E	OMEG		450 $p p \to p_f p_s K^+ K^- \pi^+ \pi^-$
1415 ±25		[8] ANISOVICH 97C	RVUE		11 $K^- p \to K^- \pi^+ n$
~ 1450		[13] TORNQVIST 96	RVUE		$\pi\pi \to \pi\pi$, $K\overline{K}$, $K\pi$
1412 ± 6		[14] 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		[15,16] 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] S-Matrix pole. Supersedes BUGG 06. Combined analysis of ASTON 88, ABLIKIM 06C, AITALA 06, and LINK 09 using an s-dependent width with couplings to $K\pi$ and $K\eta'$, and the Adler zero near thresholds.

[2] From the isobar model with a complex pole for the κ.

[3] From a non-parametric analysis.

[4] A Breit-Wigner mass and width.

[5] 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.

[6] S-matrix pole. Using ASTON 88 and assuming $K_0^*(800)$, $K_0^*(1950)$.

[7] Using ASTON 88 and assuming $K_0^*(800)$.

[8] T-matrix pole. Reanalysis of ASTON 88 data.

[9] Breit-Wigner fit. Using ASTON 88.

[10] Assuming a low-mass scalar $K\pi$ resonance, $\kappa(800)$.

[11] T-matrix pole. Using data from ESTABROOKS 78 and ASTON 88.

[12] J^P not determined, could be $K_2^*(1430)$.

[13] T-matrix pole.

[14] Uses a model for the background, without this background they get a mass 1340 MeV, where the phase shift passes 90°.

[15] Mass defined by pole position.

[16] 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. • • •					
270 ±10 ±40		[17] BUGG 10	RVUE		S-matrix pole
174.2± 1.9± 3.2	141k	[18] BONVICINI 08A	CLEO		$D^+ \to K^- \pi^+ \pi^+$
~ 500		[19] LINK 07	FOCS	0	$D^+ \to K^- K^+ \pi^+$
177.0± 8.0± 3.4	54k	[20] LINK 07B	FOCS		$D^+ \to K^- \pi^+ \pi^+$
350 ±40		[21] BUGG 06	RVUE		
288 ±22		[22] 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		[23] ZHENG 04	RVUE		$K^- p \to K^- \pi^+ n$
~ 316		[24] BUGG 03	RVUE		11 $K^- p \to K^- \pi^+ n$
~ 350		[25] LI 03	RVUE		11 $K^- p \to K^- \pi^+ n$
175 ±17	15k	[26] AITALA 02	E791		$D^+ \to K^- \pi^+ \pi^+$
~ 300		[27] JAMIN 00	RVUE		$K p \to K p$
196 ±45		[28] BARBERIS 98E	OMEG		450 $p p \to p_f p_s K^+ K^- \pi^+ \pi^-$
330 ±50		[24] ANISOVICH 97C	RVUE		11 $K^- p \to K^- \pi^+ n$
~ 320		[29] 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		[30] ESTABROOKS 78	ASPK		13 $K^\pm p \to K^\pm \pi^\pm (n, \Delta)$

[17] S-Matrix pole. Supersedes BUGG 06. Combined analysis of ASTON 88, ABLIKIM 06C, AITALA 06, and LINK 09 using an s-dependent width with couplings to $K\pi$ and $K\eta'$, and the Adler zero near thresholds.

[18] From the isobar model with a complex pole for the κ.

[19] From a non-parametric analysis.

[20] A Breit-Wigner mass and width.

[21] 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.

[22] S-matrix pole. Using ASTON 88 and assuming $K_0^*(800)$, $K_0^*(1950)$.

[23] Using ASTON 88 and assuming $K_0^*(800)$.

[24] T-matrix pole. Reanalysis of ASTON 88 data.

[25] Breit-Wigner fit. Using ASTON 88.

[26] Assuming a low-mass scalar $K\pi$ resonance, $\kappa(800)$.

[27] T-matrix pole. Using data from ESTABROOKS 78 and ASTON 88.

[28] J^P not determined, could be $K_2^*(1430)$.

[29] T-matrix pole.

[30] 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

$\Gamma(K\pi)/\Gamma_{\text{total}}$ **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

BUGG	10	PR D81 014002	D.V. Bugg	(LOQM)
LINK	09	PL B681 14	J.M. Link *et al.*	(FNAL FOCUS Collab.)
BONVICINI	08A	PR D78 052001	G. Bonvicini *et al.*	(CLEO Collab.)
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.)
AITALA	06	PR D73 032004	E.M. Aitala *et al.*	(FNAL E791 Collab.)
Also		PR D74 059901 (errat.)	E.M. Aitala *et al.*	(FNAL E791 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)