$K^*(1410)$

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

$K^*(1410)$ T-MATRIX POLE $\sqrt{s}$

Note that $\Gamma = -2\ \mathrm{Im}(\sqrt{s})$.

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
$(1368 \pm 38) - i\,(106^{+48}_{-59})$ OUR ESTIMATE				
$(1368 \pm 38) - i\,(106^{+48}_{-59})$	[1] PELAEZ	17	RVUE	$\pi K \to \pi K$

[1] Reanalysis of ESTABROOKS 78 and ASTON 88 satisfying Forward Dispersion Relations and using sequences of Pade approximants.

$K^*(1410)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1414±15 OUR AVERAGE		Error includes scale factor of 1.3.				
1380±21±19		ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
1420± 7±10		ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1437± 8±16	190k	[1] AAIJ	16N	LHCB		$D^0 \to (K^0_S \pi^\mp) K^\pm$
1426± 8±24	190k	[2] AAIJ	16N	LHCB		$D^0 \to K^0_S (K^\pm \pi^\mp)$
1276^{+72}_{-77}		[3,4] BOITO	09	RVUE		$\tau^- \to K^0_S \pi^- \nu_\tau$
1367±54		BIRD	89	LASS	–	11 $K^- p \to \overline{K}^0 \pi^- p$
1474±25		BAUBILLIER	82B	HBC	0	8.25 $K^- p \to \overline{K}^0 2\pi n$
1500±30		ETKIN	80	MPS	0	6 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$

[1] Using a parametrization for the $K\pi$ S-wave similar to ASTON 88 with fixed resonance width.
[2] Using a $K\pi$ S-wave parametrization with resonant and non-resonant contributions.
[3] From the pole position of the $K\pi$ vector form factor in the complex s-plane and using EPIFANOV 07 data.
[4] Systematic uncertainties not estimated.

$K^*(1410)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
232± 21 OUR AVERAGE		Error includes scale factor of 1.1.				
176± 52±22		ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
240± 18±12		ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
210± 20±60	190k	[1] AAIJ	16N	LHCB		$D^0 \to (K^0_S \pi^\mp) K^\pm$
270± 20±40	190k	[1] AAIJ	16N	LHCB		$D^0 \to K^0_S (K^\pm \pi^\mp)$
198^{+61}_{-87}		[2,3] BOITO	09	RVUE		$\tau^- \to K^0_S \pi^- \nu_\tau$

114±101	BIRD	89	LASS	–	11 $K^- p \to \overline{K}^0 \pi^- p$
275± 65	BAUBILLIER	82B	HBC	0	8.25 $K^- p \to \overline{K}^0 2\pi n$
500±100	ETKIN	80	MPS	0	6 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$

[1] Using a $K\pi$ S-wave parametrization with resonant and non-resonant contributions.
[2] From the pole position of the $K\pi$ vector form factor in the complex s-plane and using EPIFANOV 07 data.
[3] Systematic uncertainties not estimated.

$K^*(1410)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)		Confidence level
Γ_1	$K^*(892)\pi$	> 40	%	95%
Γ_2	$K\pi$	(6.6±1.3)	%	
Γ_3	$K\rho$	< 7	%	95%
Γ_4	γK^0	< 2.3	$\times 10^{-4}$	90%
Γ_5	$K\phi$	seen		

$K^*(1410)$ PARTIAL WIDTHS

$\Gamma(\gamma K^0)$ Γ_4

VALUE (keV)	*CL%*	*DOCUMENT ID*	*TECN*	*COMMENT*
<52.9	90	ALAVI-HARATI 02B	KTEV	$K + A \to K^* + A$

$K^*(1410)$ BRANCHING RATIOS

$\Gamma(K\rho)/\Gamma(K^*(892)\pi)$ Γ_3/Γ_1

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
<0.17	95	ASTON	84	LASS	0	11 $K^- p \to \overline{K}^0 2\pi n$

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

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
<0.16	95	ASTON	84	LASS	0	11 $K^- p \to \overline{K}^0 2\pi n$

$\Gamma(K\pi)/\Gamma_{total}$ Γ_2/Γ

VALUE	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
0.066±0.010±0.008	ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$

$\Gamma(K\phi)/\Gamma_{total}$ Γ_5/Γ

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
seen	24k	[1] AAIJ	21E	LHCB	$B^+ \to J/\psi\phi K^+$

[1] From an amplitude analysis of the decay $B^+ \to J/\psi\phi K^+$ with a significance of 7.7 σ.

*K**(1410) REFERENCES

AAIJ	21E	PRL 127 082001	R. Aaij *et al.*	(LHCb Collab.)
PELAEZ	17	EPJ C77 91	J.R. Pelaez, A.Rodas, J.R. de Elvira	
AAIJ	16N	PR D93 052018	R. Aaij *et al.*	(LHCb Collab.)
BOITO	09	EPJ C59 821	D.R. Boito, R. Escribano, M. Jamin	
EPIFANOV	07	PL B654 65	D. Epifanov *et al.*	(BELLE Collab.)
ALAVI-HARATI	02B	PRL 89 072001	A. Alavi-Harati *et al.*	(FNAL KTeV Collab.)
BIRD	89	SLAC-332	P.F. Bird	(SLAC)
ASTON	88	NP B296 493	D. Aston *et al.*	(SLAC, NAGO, CINC, INUS)
ASTON	87	NP B292 693	D. Aston *et al.*	(SLAC, NAGO, CINC, INUS)
ASTON	84	PL 149B 258	D. Aston *et al.*	(SLAC, CARL, OTTA) JP
BAUBILLIER	82B	NP B202 21	M. Baubillier *et al.*	(BIRM, CERN, GLAS+)
ETKIN	80	PR D22 42	A. Etkin *et al.*	(BNL, CUNY) JP
ESTABROOKS	78	NP B133 490	P.G. Estabrooks *et al.*	(MCGI, CARL, DURH+)