$K^*(1410)$

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

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

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$(1368 \pm 38) - i\,(106^{+48}_{-59})$	[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	$K + A \rightarrow K^* + A$

$K^*(1410)$ 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 $K^- p \rightarrow \overline{K}^0 2\pi n$

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

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

$\Gamma(K\pi)/\Gamma_{total}$ — Γ_2/Γ

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

$\Gamma(K\phi)/\Gamma_{total}$ — Γ_5/Γ

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

[1] From an amplitude analysis of the decay $B^+ \rightarrow J/\psi\phi K^+$ 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+)