

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

OMITTED FROM SUMMARY TABLE

Needs confirmation. See the mini-review on scalar mesons under $f_0(500)$ (see the index for the page number).

$K_0^*(800)$ MASS

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
682 ± 29	OUR AVERAGE	Error includes scale factor of 2.4. See the ideogram below.		
826 ± 49	$^{+49}_{-34}$	1338	¹ ABLIKIM 11B BES2	$J/\psi \rightarrow K_S^0 K_S^0 \pi^+ \pi^-$
849 ± 77	$^{+18}_{-14}$	1421	^{2,3} ABLIKIM 10E BES2	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp \pi^0$
841 ± 30	$^{+81}_{-73}$	25k	^{4,5} ABLIKIM 06C BES2	$J/\psi \rightarrow \bar{K}^*(892)^0 K^+ \pi^-$
658 ± 13			⁶ DESCOTES-G..06 RVUE	$\pi K \rightarrow \pi K$
797 ± 19	± 43	15k	^{7,8} AITALA 02 E791	$D^+ \rightarrow K^- \pi^+ \pi^+$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
663 ± 8	± 34		⁹ BUGG 10 RVUE	S-matrix pole
706.0 ± 1.8	± 22.8	141k	¹⁰ BONVICINI 08A CLEO	$D^+ \rightarrow K^- \pi^+ \pi^+$
856 ± 17	± 13	54k	¹¹ LINK 07B FOCS	$D^+ \rightarrow K^- \pi^+ \pi^+$
750	$^{+30}_{-55}$		¹² BUGG 06 RVUE	
855 ± 15		0.6k	¹³ CAWLFIELD 06A CLEO	$D^0 \rightarrow K^+ K^- \pi^0$
694 ± 53			^{3,14} ZHOU 06 RVUE	$K p \rightarrow K^- \pi^+ n$
753 ± 52			¹⁵ PELAEZ 04A RVUE	$K \pi \rightarrow K \pi$
594 ± 79			¹⁴ ZHENG 04 RVUE	$K^- p \rightarrow K^- \pi^+ n$
722 ± 60			¹⁶ BUGG 03 RVUE	$11 K^- p \rightarrow K^- \pi^+ n$
905	$^{+65}_{-30}$		¹⁷ ISHIDA 97B RVUE	$11 K^- p \rightarrow K^- \pi^+ n$

¹ The Breit-Wigner parameters from a fit with seven intermediate resonances. The S-matrix pole position is $(764 \pm 63^{+71}_{-54}) - i(306 \pm 149^{+143}_{-85})$ MeV.

² From a fit including ten additional resonances and energy-independent Breit-Wigner width.

³ S-matrix pole.

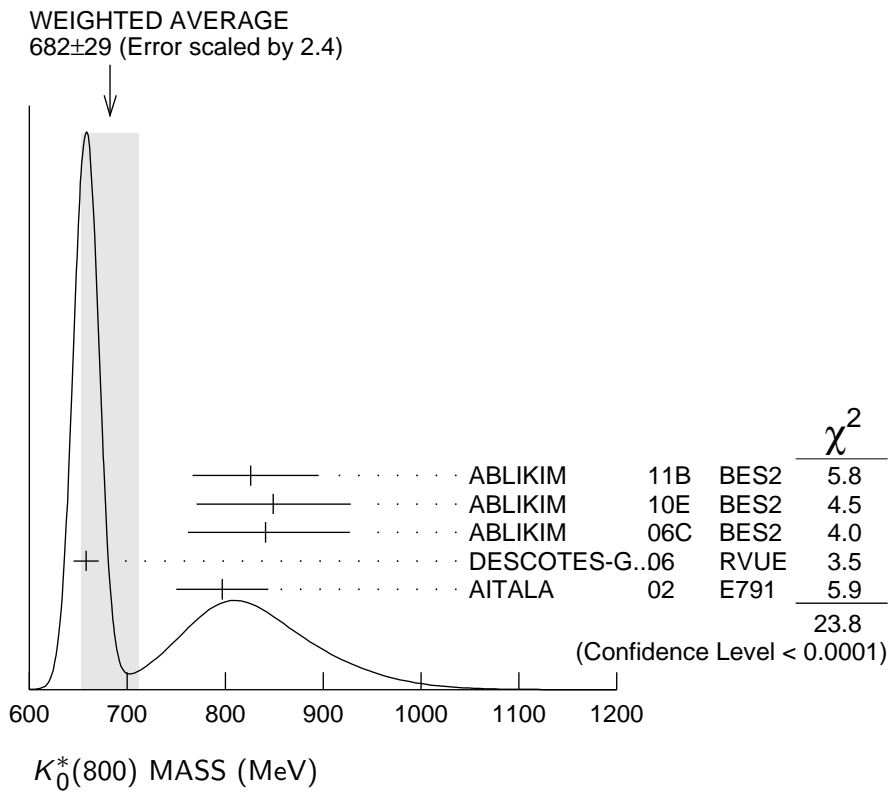
⁴ S-matrix pole. GUO 06 in a chiral unitary approach report a mass of 757 ± 33 MeV and a width of 558 ± 82 MeV.

⁵ A fit in the $K_0^*(800) + K^*(892) + K^*(1410)$ model with mass and width of the $K_0^*(800)$ from ABLIKIM 06C well describes the left slope of the $K_S^0 \pi^-$ invariant mass spectrum in $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$ decay studied by EPIFANOV 07.

⁶ S-matrix pole. Using Roy-Steiner equations (ROY 71) as well as unitarity, analyticity and crossing symmetry constraints.

⁷ Not seen by KOPP 01 using 7070 events of $D^0 \rightarrow K^- \pi^+ \pi^0$. LINK 02E and LINK 05I show clear evidence for a constant non-resonant scalar amplitude rather than $K_0^*(800)$ in their high statistics analysis of $D^+ \rightarrow K^- \pi^+ \mu^+ \nu_\mu$.

- 8 AUBERT 07T does not find evidence for the charged $K_0^*(800)$ using 11k events of $D^0 \rightarrow K^- K^+ \pi^0$.
- 9 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.
- 10 T-matrix pole.
- 11 A Breit-Wigner mass and width.
- 12 S-matrix pole. Reanalysis of ASTON 88, AITALA 02, and ABLIKIM 06C using for the κ an s -dependent width with an Adler zero near threshold.
- 13 Breit-Wigner parameters. A significant S -wave can be also modeled as a non-resonant contribution.
- 14 Using ASTON 88.
- 15 T-matrix pole. Reanalysis of data from LINGLIN 73, ESTABROOKS 78, and ASTON 88 in the unitarized ChPT model.
- 16 T-matrix pole. Reanalysis of ASTON 88 data.
- 17 Reanalysis of ASTON 88 using interfering Breit-Wigner amplitudes.



$K_0^*(800)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
547 ± 24	OUR AVERAGE	Error includes scale factor of 1.1.		
449 ± 156 ⁺¹⁴⁴ / ₋₈₁	1338	18 ABLIKIM	11B BES2	$J/\psi \rightarrow K_S^0 K_S^0 \pi^+ \pi^-$
512 ± 80 ⁺⁹² / ₋₄₄	1421	19,20 ABLIKIM	10E BES2	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp \pi^0$
618 ± 90 ⁺⁹⁶ / ₋₁₄₄	25k	19,21 ABLIKIM	06C BES2	$J/\psi \rightarrow \bar{K}^*(892)^0 K^+ \pi^-$
557 ± 24		22 DESCOTES-G..06	RVUE	$\pi K \rightarrow \pi K$
410 ± 43 ± 87	15k	23,24 AITALA	02 E791	$D^+ \rightarrow K^- \pi^+ \pi^+$

• • • We do not use the following data for averages, fits, limits, etc. • • •

658 ± 10 ± 44	25	BUGG	10	RVUE	S-matrix pole
638.8 ± 4.4 ± 40.4 141k	26	BONVICINI	08A	CLEO	$D^+ \rightarrow K^- \pi^+ \pi^+$
464 ± 28 ± 22 54k	27	LINK	07B	FOCS	$D^+ \rightarrow K^- \pi^+ \pi^+$
684 ± 120	28	BUGG	06	RVUE	
251 ± 48 0.6k	29	CAWLFIELD	06A	CLEO	$D^0 \rightarrow K^+ K^- \pi^0$
606 ± 59	19,30	ZHOU	06	RVUE	$K p \rightarrow K^- \pi^+ n$
470 ± 66	31	PELAEZ	04A	RVUE	$K \pi \rightarrow K \pi$
724 ± 332	30	ZHENG	04	RVUE	$K^- p \rightarrow K^- \pi^+ n$
772 ± 100	32	BUGG	03	RVUE	$11 K^- p \rightarrow K^- \pi^+ n$
545 +235 -110	33	ISHIDA	97B	RVUE	$11 K^- p \rightarrow K^- \pi^+ n$

¹⁸ The Breit-Wigner parameters from a fit with seven intermediate resonances. The S-matrix pole position is $(764 \pm 63_{-54}^{+71}) - i(306 \pm 149_{-85}^{+143})$ MeV.

¹⁹ S-matrix pole.

²⁰ From a fit including ten additional resonances and energy-independent Breit-Wigner width.

²¹ A fit in the $K_0^*(800) + K^*(892) + K^*(1410)$ model with mass and width of the $K_0^*(800)$ from ABLIKIM 06C well describes the left slope of the $K_S^0 \pi^-$ invariant mass spectrum in $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$ decay studied by EPIFANOV 07.

²² S-matrix pole. Using Roy-Steiner equations (ROY 71) as well as unitarity, analyticity and crossing symmetry constraints.

²³ Not seen by KOPP 01 using 7070 events of $D^0 \rightarrow K^- \pi^+ \pi^0$. LINK 02E and LINK 05I show clear evidence for a constant non-resonant scalar amplitude rather than $K_0^*(800)$ in their high statistics analysis of $D^+ \rightarrow K^- \pi^+ \mu^+ \nu_\mu$.

²⁴ AUBERT 07T does not find evidence for the charged $K_0^*(800)$ using 11k events of $D^0 \rightarrow K^- K^+ \pi^0$.

²⁵ 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.

²⁶ T-matrix pole.

²⁷ A Breit-Wigner mass and width.

²⁸ S-matrix pole. Reanalysis of ASTON 88, AITALA 02, and ABLIKIM 06C using for the κ an s-dependent width with an Adler zero near threshold.

²⁹ Statistical error only. A fit to the Dalitz plot including the $K_0^*(800)^\pm$, $K^*(892)^\pm$, and ϕ resonances modeled as Breit-Wigners. A significant S-wave can be also modeled as a non-resonant contribution.

³⁰ Using ASTON 88.

³¹ T-matrix pole. Reanalysis of data from LINGLIN 73, ESTABROOKS 78, and ASTON 88 in the unitarized ChPT model.

³² T-matrix pole. Reanalysis of ASTON 88 data.

³³ Reanalysis of ASTON 88 using interfering Breit-Wigner amplitudes.

$K_0^*(800)$ REFERENCES

ABLIKIM	11B	PL B698 183	M. Ablikim <i>et al.</i>	(BES II Collab.)
ABLIKIM	10E	PL B693 88	M. Ablikim <i>et al.</i>	(BES II Collab.)
BUGG	10	PR D81 014002	D.V. Bugg	(LOQM)
LINK	09	PL B681 14	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
BONVICINI	08A	PR D78 052001	G. Bonvicini <i>et al.</i>	(CLEO Collab.)
AUBERT	07T	PR D76 011102R	B. Aubert <i>et al.</i>	(BABAR Collab.)
EPIFANOV	07	PL B654 65	D. Epifanov <i>et al.</i>	(BELLE Collab.)
LINK	07B	PL B653 1	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
ABLIKIM	06C	PL B633 681	M. Ablikim <i>et al.</i>	(BES Collab.)
AITALA	06	PR D73 032004	E.M. Aitala <i>et al.</i>	(FNAL E791 Collab.)
Also		PR D74 059901 (errat.)	E.M. Aitala <i>et al.</i>	(FNAL E791 Collab.)
BUGG	06	PL B632 471	D.V. Bugg	(LOQM)
CAWLFIELD	06A	PR D74 031108R	C. Cawfield <i>et al.</i>	(CLEO Collab.)
DESCOTES-G...	06	EPJ C48 553	S. Descotes-Genon, B. Moussallam	
GUO	06	NP A773 78	F.K. Guo <i>et al.</i>	
ZHOU	06	NP A775 212	Z.Y. Zhou, H.Q. Zheng	
LINK	05I	PL B621 72	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
PELAEZ	04A	MPL A19 2879	J.R. Pelaez	
ZHENG	04	NP A733 235	H.Q. Zheng <i>et al.</i>	
BUGG	03	PL B572 1	D.V. Bugg	
AITALA	02	PRL 89 121801	E.M. Aitala <i>et al.</i>	(FNAL E791 Collab.)
LINK	02E	PL B535 43	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
KOPP	01	PR D63 092001	S. Kopp <i>et al.</i>	(CLEO Collab.)
ISHIDA	97B	PTP 98 621	S. Ishida <i>et al.</i>	
ASTON	88	NP B296 493	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)
ESTABROOKS	78	NP B133 490	P.G. Estabrooks <i>et al.</i>	(MCGI, CARL, DURH+)
LINGLIN	73	NP B55 408	D. Linglin	(CERN)
ROY	71	PL 36B 353	S.M. Roy	