

**$K_1(1400)$** 

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

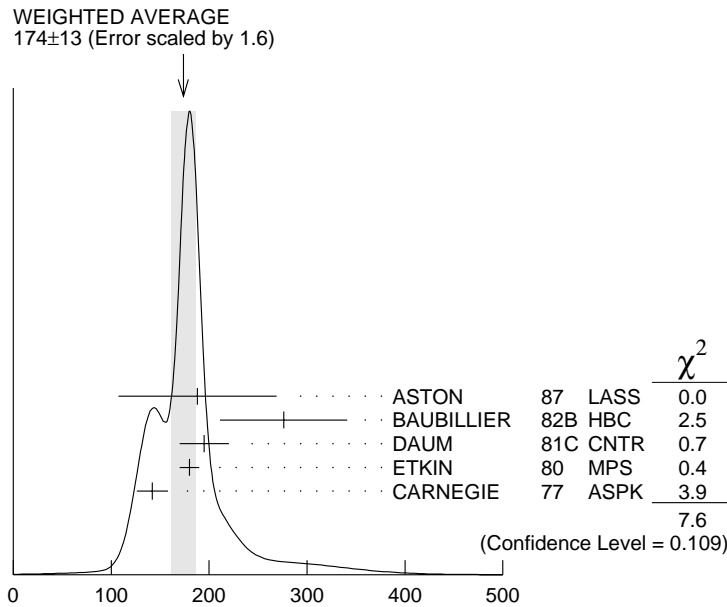
 **$K_1(1400)$  MASS**

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
<b>1402 ± 7 OUR AVERAGE</b>				
1373 ± 14 ± 18	<sup>1</sup> ASTON	87 LASS	0	11 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
1392 ± 18	BAUBILLIER	82B HBC	0	8.25 $K^- p \rightarrow K_S^0 \pi^+ \pi^- n$
1410 ± 25	DAUM	81C CNTR	-	63 $K^- p \rightarrow K^- 2\pi p$
1415 ± 15	ETKIN	80 MPS	0	6 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
1404 ± 10	<sup>2</sup> CARNEGIE	77 ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
~ 1350	<sup>3</sup> TORNQVIST	82B RVUE		
~ 1400	VERGEEST	79 HBC	-	4.2 $K^- p \rightarrow (\bar{K}\pi\pi)^- p$
~ 1400	BRANDENB...	76 ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
1420	DAVIS	72 HBC	+	12 $K^+ p$
1368 ± 18	FIRESTONE	72B DBC	+	12 $K^+ d$

<sup>1</sup> From partial-wave analysis of  $K^0 \pi^+ \pi^-$  system.<sup>2</sup> From a model-dependent fit with Gaussian background to BRANDENBURG 76 data.<sup>3</sup> From a unitarized quark-model calculation. **$K_1(1400)$  WIDTH**

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
<b>174 ± 13 OUR AVERAGE</b> Error includes scale factor of 1.6. See the ideogram below.				
188 ± 54 ± 60	<sup>4</sup> ASTON	87 LASS	0	11 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
276 ± 65	BAUBILLIER	82B HBC	0	8.25 $K^- p \rightarrow K_S^0 \pi^+ \pi^- n$
195 ± 25	DAUM	81C CNTR	-	63 $K^- p \rightarrow K^- 2\pi p$
180 ± 10	ETKIN	80 MPS	0	6 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
142 ± 16	<sup>5</sup> CARNEGIE	77 ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
~ 200	VERGEEST	79 HBC	-	4.2 $K^- p \rightarrow (\bar{K}\pi\pi)^- p$
~ 160	BRANDENB...	76 ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
80	DAVIS	72 HBC	+	12 $K^+ p$
241 ± 30	FIRESTONE	72B DBC	+	12 $K^+ d$

<sup>4</sup> From partial-wave analysis of  $K^0 \pi^+ \pi^-$  system.<sup>5</sup> From a model-dependent fit with Gaussian background to BRANDENBURG 76 data.



$K_1(1400)$  width (MeV)

### $K_1(1400)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $K^*(892)\pi$	(94 ± 6) %
$\Gamma_2$ $K\rho$	(3.0 ± 3.0) %
$\Gamma_3$ $Kf_0(1370)$	(2.0 ± 2.0) %
$\Gamma_4$ $K\omega$	(1.0 ± 1.0) %
$\Gamma_5$ $K_0^*(1430)\pi$	not seen

### $K_1(1400)$ PARTIAL WIDTHS

$\Gamma(K^*(892)\pi)$ <span style="float: right;"><math>\Gamma_1</math></span>				
VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
<b>117 ± 10</b>	CARNEGIE	77	ASPK	± 13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
$\Gamma(K\rho)$ <span style="float: right;"><math>\Gamma_2</math></span>				
VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
<b>2 ± 1</b>	CARNEGIE	77	ASPK	± 13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
$\Gamma(K\omega)$ <span style="float: right;"><math>\Gamma_4</math></span>				
VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
<b>23 ± 12</b>	CARNEGIE	77	ASPK	± 13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$

## $K_1(1400)$ BRANCHING RATIOS

$\Gamma(K^*(892)\pi)/\Gamma_{\text{total}}$	$\Gamma_1/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
<b>0.94 ± 0.06</b>	<sup>6</sup> DAUM            81C CNTR    63 $K^- p \rightarrow K^- 2\pi p$

$\Gamma(K\rho)/\Gamma_{\text{total}}$	$\Gamma_2/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
<b>0.03 ± 0.03</b>	<sup>6</sup> DAUM            81C CNTR    63 $K^- p \rightarrow K^- 2\pi p$

$\Gamma(K f_0(1370))/\Gamma_{\text{total}}$	$\Gamma_3/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
<b>0.02 ± 0.02</b>	<sup>6</sup> DAUM            81C CNTR    63 $K^- p \rightarrow K^- 2\pi p$

$\Gamma(K\omega)/\Gamma_{\text{total}}$	$\Gamma_4/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
<b>0.01 ± 0.01</b>	<sup>6</sup> DAUM            81C CNTR    63 $K^- p \rightarrow K^- 2\pi p$

$\Gamma(K_0^*(1430)\pi)/\Gamma_{\text{total}}$	$\Gamma_5/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
not seen	<sup>6</sup> DAUM            81C CNTR    63 $K^- p \rightarrow K^- 2\pi p$

### *D*-wave/*S*-wave RATIO FOR $K_1(1400) \rightarrow K^*(892)\pi$

<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
<b>0.04 ± 0.01</b>	<sup>6</sup> DAUM            81C CNTR    63 $K^- p \rightarrow K^- 2\pi p$

<sup>6</sup> Average from low and high *t* data.

## $K_1(1400)$ REFERENCES

ASTON	87	NP B292 693	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)
BAUBILLIER	82B	NP B202 21	M. Baubillier <i>et al.</i>	(BIRM, CERN, GLAS+)
TORNQVIST	82B	NP B203 268	N.A. Tornqvist	(HELS)
DAUM	81C	NP B187 1	C. Daum <i>et al.</i>	(AMST, CERN, CRAC, MPIM+)
ETKIN	80	PR D22 42	A. Etkin <i>et al.</i>	(BNL, CUNY) JP
VERGEEST	79	NP B158 265	J.S.M. Vergeest <i>et al.</i>	(NIJM, AMST, CERN+)
CARNEGIE	77	NP B127 509	R.K. Carnegie <i>et al.</i>	(SLAC)
BRANDENB...	76	PRL 26 703	G.W. Brandenburg <i>et al.</i>	(SLAC) JP
DAVIS	72	PR D5 2688	P.J. Davis <i>et al.</i>	(LBL)
FIRESTONE	72B	PR D5 505	A. Firestone <i>et al.</i>	(LBL)

## OTHER RELATED PAPERS

SUZUKI	93	PR D47 1252	M. Suzuki	(LBL)
FERNANDEZ	82	ZPHY C16 95	C. Fernandez <i>et al.</i>	(MADR, CERN, CDEF+)
SHEN	66	PRL 17 726	B.C. Shen <i>et al.</i>	(LRL)
Also	66	Private Comm.	G. Goldhaber	(LRL)
ALMEIDA	65	PL 16 184	S.P. Almeida <i>et al.</i>	(CAVE)
ARMENTEROS	64	PL 9 207	R. Armenteros <i>et al.</i>	(CERN, CDEF)
Also	66	PR 145 1095	N. Barash <i>et al.</i>	(COLU)