

**$\pi_1(1600)$** 

$$I^G(J^{PC}) = 1^-(1^-+)$$

 **$\pi_1(1600)$  MASS**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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**1662<sup>+8</sup><sub>-9</sub> OUR AVERAGE**

1660 ± 10 <sup>+0</sup> <sub>-64</sub>	420k	ALEKSEEV	10	COMP	190 $\pi^- Pb \rightarrow \pi^- \pi^- \pi^+ Pb'$
1664 ± 8 ± 10	145k	<sup>1</sup> LU	05	B852	18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$
1709 ± 24 ± 41	69k	<sup>2</sup> KUHN	04	B852	18 $\pi^- p \rightarrow \eta \pi^+ \pi^- \pi^- p$
1597 ± 10 <sup>+45</sup> <sub>-10</sub>		<sup>2</sup> IVANOV	01	B852	18 $\pi^- p \rightarrow \eta' \pi^- p$

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

1593 ± 8 <sup>+29</sup> <sub>-47</sub>		<sup>2,3</sup> ADAMS	98B	B852	18.3 $\pi^- p \rightarrow \pi^+ \pi^- \pi^- p$
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<sup>1</sup> May be a different state: natural and unnatural parity exchanges.

<sup>2</sup> Natural parity exchange.

<sup>3</sup> Superseded by DZIERBA 06 excluding this state in a more refined PWA analysis, with 2.6 M events of  $\pi^- p \rightarrow \pi^- \pi^- \pi^+ p$  and 3 M events of  $\pi^- p \rightarrow \pi^- \pi^0 \pi^0 p$  of E852 data.

 **$\pi_1(1600)$  WIDTH**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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**241 ± 40 OUR AVERAGE** Error includes scale factor of 1.4. See the ideogram below.

269 ± 21 <sup>+42</sup> <sub>-64</sub>	420k	ALEKSEEV	10	COMP	190 $\pi^- Pb \rightarrow \pi^- \pi^- \pi^+ Pb'$
185 ± 25 ± 28	145k	<sup>4</sup> LU	05	B852	18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$
403 ± 80 ± 115	69k	<sup>5</sup> KUHN	04	B852	18 $\pi^- p \rightarrow \eta \pi^+ \pi^- \pi^- p$
340 ± 40 ± 50		<sup>5</sup> IVANOV	01	B852	18 $\pi^- p \rightarrow \eta' \pi^- p$

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

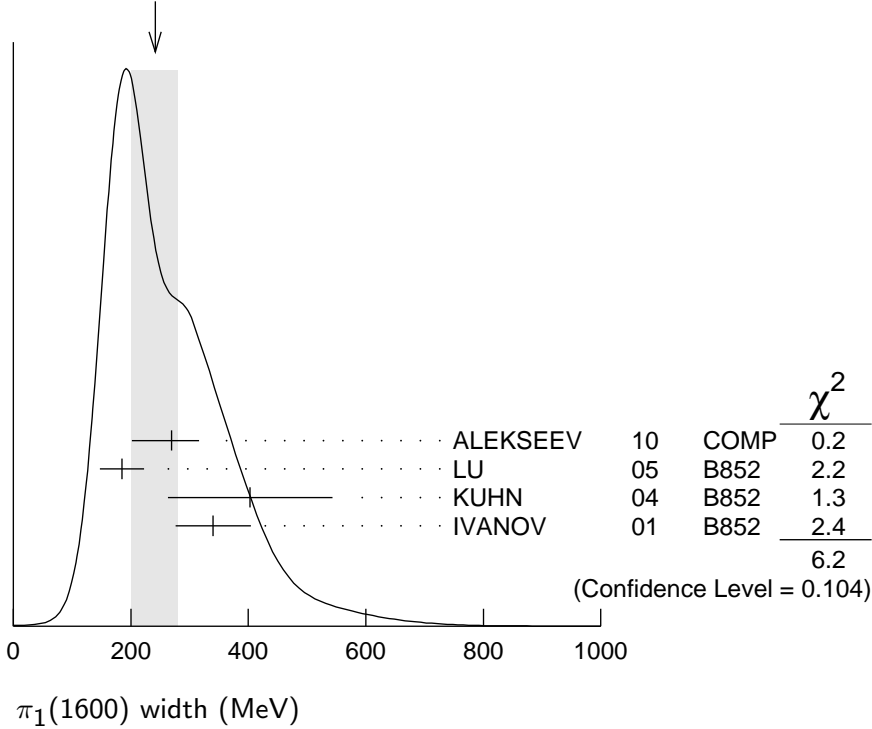
168 ± 20 <sup>+150</sup> <sub>-12</sub>		<sup>5,6</sup> ADAMS	98B	B852	18.3 $\pi^- p \rightarrow \pi^+ \pi^- \pi^- p$
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<sup>4</sup> May be a different state: natural and unnatural parity exchanges.

<sup>5</sup> Natural parity exchange.

<sup>6</sup> Superseded by DZIERBA 06 excluding this state in a more refined PWA analysis, with 2.6 M events of  $\pi^- p \rightarrow \pi^- \pi^- \pi^+ p$  and 3 M events of  $\pi^- p \rightarrow \pi^- \pi^0 \pi^0 p$  of E852 data.

WEIGHTED AVERAGE  
 $241 \pm 40$  (Error scaled by 1.4)



### $\pi_1(1600)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $\pi\pi\pi$	not seen
$\Gamma_2$ $\rho^0\pi^-$	not seen
$\Gamma_3$ $f_2(1270)\pi^-$	not seen
$\Gamma_4$ $b_1(1235)\pi$	seen
$\Gamma_5$ $\eta'(958)\pi^-$	seen
$\Gamma_6$ $f_1(1285)\pi$	seen

### $\pi_1(1600)$ BRANCHING RATIOS

$\Gamma(\rho^0\pi^-)/\Gamma_{\text{total}}$	VALUE	DOCUMENT ID	TECN	COMMENT	$\Gamma_2/\Gamma$
not seen		NOZAR	09	CLAS $\gamma p \rightarrow 2\pi^+\pi^-n$	
not seen		<sup>7</sup> DZIERBA	06	B852 $18\pi^-p$	

<sup>7</sup> From the PWA analysis of 2.6 M  $\pi^-p \rightarrow \pi^-\pi^-\pi^+p$  and 3 M events of  $\pi^-p \rightarrow \pi^-\pi^0\pi^0p$  of E852 data. Supersedes ADAMS 98B.

$\Gamma(f_2(1270)\pi^-)/\Gamma_{\text{total}}$	VALUE	DOCUMENT ID	TECN	COMMENT	$\Gamma_3/\Gamma$
not seen		<sup>8</sup> DZIERBA	06	B852 $18\pi^-p$	

<sup>8</sup> From the PWA analysis of 2.6 M  $\pi^-p \rightarrow \pi^-\pi^-\pi^+p$  and 3 M events of  $\pi^-p \rightarrow \pi^-\pi^0\pi^0p$  of E852 data. Supersedes CHUNG 02.

$\Gamma(b_1(1235)\pi)/\Gamma_{\text{total}}$   $\Gamma_4/\Gamma$

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>seen</b>	35280	<sup>9</sup> BAKER	03	SPEC $\bar{p}p \rightarrow \omega\pi^+\pi^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
seen	145k	LU	05	B852 $18\pi^-p \rightarrow \omega\pi^-\pi^0p$
<sup>9</sup> $B((b_1\pi)_{D\text{-wave}})/B((b_1\pi)_{S\text{-wave}})=0.3 \pm 0.1.$				

$\Gamma(\eta'(958)\pi^-)/\Gamma_{\text{total}}$   $\Gamma_5/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>seen</b>	IVANOV	01	B852 $18\pi^-p \rightarrow \eta'\pi^-p$

$\Gamma(f_1(1285)\pi)/\Gamma(\eta'(958)\pi^-)$   $\Gamma_6/\Gamma_5$

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>3.80±0.78</b>	69k	<sup>10</sup> KUHN	04	B852 $18\pi^-p \rightarrow \eta\pi^+\pi^-\pi^-p$
<sup>10</sup> Using $\eta'(958)\pi$ data from IVANOV 01.				

**$\pi_1(1600)$  REFERENCES**

ALEKSEEV	10	PRL 104 241803	M.G. Alekseev <i>et al.</i>	(COMPASS Collab.)
NOZAR	09	PRL 102 102002	M. Nozar <i>et al.</i>	(CLAS Collab.)
DZIERBA	06	PR D73 072001	A.R. Dzierba <i>et al.</i>	(BNL E852 Collab.)
LU	05	PRL 94 032002	M. Lu <i>et al.</i>	(BNL E852 Collab.)
KUHN	04	PL B595 109	J. Kuhn <i>et al.</i>	(BNL E852 Collab.)
BAKER	03	PL B563 140	C.A. Baker <i>et al.</i>	
CHUNG	02	PR D65 072001	S.U. Chung <i>et al.</i>	(BNL E852 Collab.)
IVANOV	01	PRL 86 3977	E.I. Ivanov <i>et al.</i>	(BNL E852 Collab.)
ADAMS	98B	PRL 81 5760	G.S. Adams <i>et al.</i>	(BNL E852 Collab.)