

$\pi_1(1600)$

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

$\pi_1(1600)$ MASS

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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1662⁺¹⁵₋₁₁ OUR AVERAGE Error includes scale factor of 1.2.

1664 ± 8 ± 10	145k	¹ LU	05	B852	18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$
1709 ± 24 ± 41	69k	² KUHN	04	B852	18 $\pi^- p \rightarrow \eta \pi^+ \pi^- \pi^- p$
1597 ± 10 ⁺⁴⁵ ₋₁₀		² IVANOV	01	B852	18 $\pi^- p \rightarrow \eta' \pi^- p$

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

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

² Natural parity exchange.

³ Superseded by DZIERBA 06 excluding this state in a more refined PWA analysis, with 2.6 M events of $\pi^- p \rightarrow \pi^- \pi^- \pi^+ p$ and 3 M events of $\pi^- p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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234 ± 50 OUR AVERAGE Error includes scale factor of 1.7. See the ideogram below.

185 ± 25 ± 28	145k	⁴ LU	05	B852	18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$
403 ± 80 ± 115	69k	⁵ KUHN	04	B852	18 $\pi^- p \rightarrow \eta \pi^+ \pi^- \pi^- p$
340 ± 40 ± 50		⁵ IVANOV	01	B852	18 $\pi^- p \rightarrow \eta' \pi^- p$

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

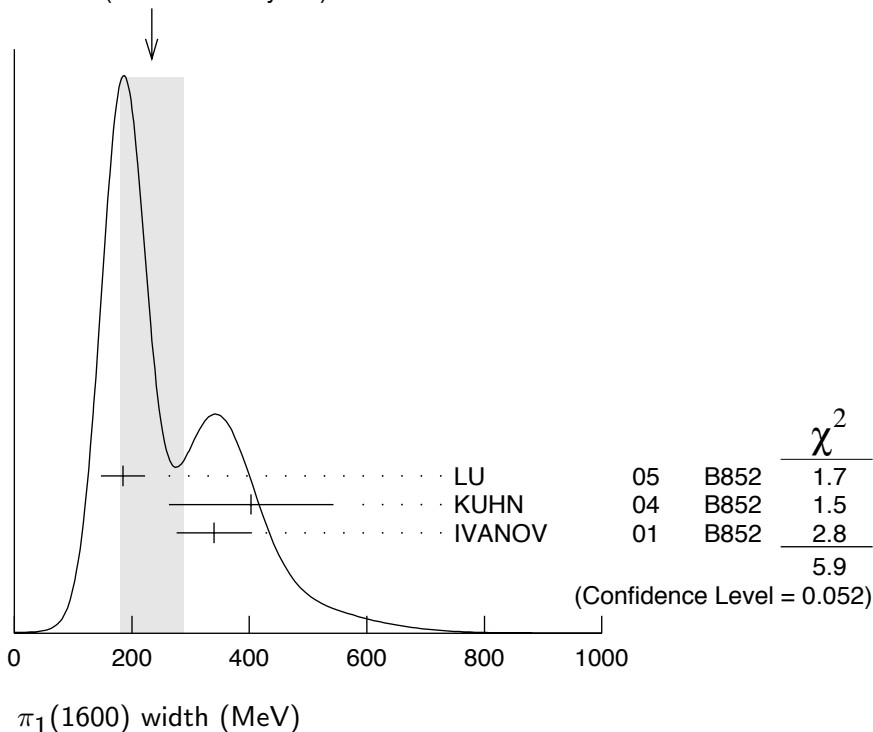
168 ± 20 ⁺¹⁵⁰ ₋₁₂		^{5,6} ADAMS	98B	B852	18.3 $\pi^- p \rightarrow \pi^+ \pi^- \pi^- p$
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⁴ May be a different state: natural and unnatural parity exchanges.

⁵ Natural parity exchange.

⁶ Superseded by DZIERBA 06 excluding this state in a more refined PWA analysis, with 2.6 M events of $\pi^- p \rightarrow \pi^- \pi^- \pi^+ p$ and 3 M events of $\pi^- p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
234±50 (Error scaled by 1.7)



$\pi_1(1600)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $\pi\pi\pi$	not seen
Γ_2 $\rho^0\pi^-$	not seen
Γ_3 $f_2(1270)\pi^-$	not seen
Γ_4 $b_1(1235)\pi$	seen
Γ_5 $\eta'(958)\pi^-$	seen
Γ_6 $f_1(1285)\pi$	seen

$\pi_1(1600)$ BRANCHING RATIOS

$\Gamma(\rho^0\pi^-)/\Gamma_{\text{total}}$	VALUE	DOCUMENT ID	TECN	COMMENT	Γ_2/Γ
not seen		⁷ DZIERBA	06	B852	18 π^-p

⁷ 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	Γ_3/Γ
not seen		⁸ DZIERBA	06	B852	18 π^-p

⁸ 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.

$\Gamma(b_1(1235)\pi)/\Gamma_{\text{total}}$ Γ_4/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
seen	35280	⁹ 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 $18\pi^-p \rightarrow \omega\pi^-\pi^0p$

 $\Gamma(\eta'(958)\pi^-)/\Gamma_{\text{total}}$ Γ_5/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
seen	IVANOV	01	B852 $18\pi^-p \rightarrow \eta'\pi^-p$

 $\Gamma(f_1(1285)\pi)/\Gamma(\eta'(958)\pi^-)$ Γ_6/Γ_5

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
3.80±0.78	69k	¹⁰ KUHN	04	B852 $18\pi^-p \rightarrow \eta\pi^+\pi^-\pi^-p$

⁹ $B((b_1\pi)_{D\text{-wave}})/B((b_1\pi)_{S\text{-wave}})=0.3 \pm 0.1.$

¹⁰ Using $\eta'(958)\pi$ data from IVANOV 01.

 $\pi_1(1600)$ REFERENCES

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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>	
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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.)

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