

**$\Delta(2150) S_{31}$**

$I(J^P) = \frac{3}{2}(\frac{1}{2}^-)$  Status: \*

OMITTED FROM SUMMARY TABLE

The latest GWU analysis (ARNDT 06) finds no evidence for this resonance.

**$\Delta(2150)$  BREIT-WIGNER MASS**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>\approx 2150</math> OUR ESTIMATE</b>			
2047.4 $\pm$ 27.0	<sup>1</sup> CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$
2203.2 $\pm$ 8.4	<sup>1</sup> CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$
2150 $\pm$ 100	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

**$\Delta(2150)$  BREIT-WIGNER WIDTH**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
121.6 $\pm$ 62.0	<sup>1</sup> CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$
120.5 $\pm$ 45.0	<sup>1</sup> CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$
200 $\pm$ 100	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

**$\Delta(2150)$  POLE POSITION**

**REAL PART**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2140 $\pm$ 80	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

**-2xIMAGINARY PART**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
200 $\pm$ 80	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

**$\Delta(2150)$  ELASTIC POLE RESIDUE**

**MODULUS  $|r|$**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
7 $\pm$ 2	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

**PHASE  $\theta$**

<u>VALUE (<math>^\circ</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
-60 $\pm$ 90	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

**$\Delta(2150)$  DECAY MODES**

Mode
$\Gamma_1$ $N\pi$
$\Gamma_2$ $\Sigma K$

## $\Delta(2150)$ BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{\text{total}}$				$\Gamma_1/\Gamma$
<i>VALUE</i>	<i>DOCUMENT ID</i>	<i>TECN</i>	<i>COMMENT</i>	
0.41	<sup>1</sup> CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$	
0.37	<sup>1</sup> CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$	
$0.08 \pm 0.02$	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$	

$(\Gamma_i \Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow \Delta(2150) \rightarrow \Sigma K$				$(\Gamma_1 \Gamma_2)^{1/2}/\Gamma$
<i>VALUE</i>	<i>DOCUMENT ID</i>	<i>TECN</i>	<i>COMMENT</i>	
<0.03	CANDLIN	84	DPWA $\pi^+ p \rightarrow \Sigma^+ K^+$	

## $\Delta(2150)$ FOOTNOTES

<sup>1</sup> CHEW 80 reports two  $S_{31}$  resonances in this mass region. Problems with this analysis are discussed in section 2.1.11 of HOEHLER 83.

## $\Delta(2150)$ REFERENCES

ARNDT	06	PR C74 045205	R.A. Arndt <i>et al.</i>	(GWU)
CANDLIN	84	NP B238 477	D.J. Candlin <i>et al.</i>	(EDIN, RAL, LOWC)
HOEHLER	83	Landolt-Boernstein 1/9B2	G. Hohler	(KARLT)
CHEW	80	Toronto Conf. 123	D.M. Chew	(LBL) IJP
CUTKOSKY	80	Toronto Conf. 19	R.E. Cutkosky <i>et al.</i>	(CMU, LBL) IJP
Also		PR D20 2839	R.E. Cutkosky <i>et al.</i>	(CMU, LBL)