

**$N(2100) P_{11}$**

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

OMITTED FROM SUMMARY TABLE

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

### **$N(2100)$ BREIT-WIGNER MASS**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>≈ 2100 OUR ESTIMATE</b>			
1885 ± 30	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
2125 ± 75	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
2050 ± 20	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
2068 ± 3 <sup>+15</sup> <sub>-40</sub>	ABLIKIM	06K	BES $J/\psi \rightarrow (p\pi^-)\bar{n}$
2084 ± 93	VRANA	00	DPWA Multichannel
1986 ± 26 <sup>+10</sup> <sub>-30</sub>	PLOETZKE	98	SPEC $\gamma p \rightarrow p\eta'(958)$
2203 ± 70	BATINIC	95	DPWA $\pi N \rightarrow N\pi, N\eta$

### **$N(2100)$ BREIT-WIGNER WIDTH**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
113 ± 44	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
260 ± 100	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
200 ± 30	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
165 ± 14 ± 40	ABLIKIM	06K	BES $J/\psi \rightarrow (p\pi^-)\bar{n}$
1077 ± 643	VRANA	00	DPWA Multichannel
296 ± 100 <sup>+60</sup> <sub>-10</sub>	PLOETZKE	98	SPEC $\gamma p \rightarrow p\eta'(958)$
418 ± 171	BATINIC	95	DPWA $\pi N \rightarrow N\pi, N\eta$

### **$N(2100)$ POLE POSITION**

#### **REAL PART**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2120 ± 40	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
1810	VRANA	00	DPWA Multichannel
not seen	ARNDT	91	DPWA $\pi N \rightarrow \pi N$ Soln SM90

#### **-2×IMAGINARY PART**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
240 ± 80	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
622	VRANA	00	DPWA Multichannel
not seen	ARNDT	91	DPWA $\pi N \rightarrow \pi N$ Soln SM90

## N(2100) ELASTIC POLE RESIDUE

### MODULUS $|r|$

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
14 ± 7	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$

### PHASE $\theta$

<u>VALUE (°)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
35 ± 25	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$

## N(2100) DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $N\pi$	
$\Gamma_2$ $N\eta$	(61 ± 60) %
$\Gamma_3$ $\Lambda K$	
$\Gamma_4$ $N\pi\pi$	
$\Gamma_5$ $\Delta(1232)\pi$ , <i>P</i> -wave	
$\Gamma_6$ $N\rho$ , $S=1/2$ , <i>P</i> -wave	
$\Gamma_7$ $N(\pi\pi)_{S\text{-wave}}^{I=0}$	

## N(2100) BRANCHING RATIOS

### $\Gamma(N\pi)/\Gamma_{\text{total}}$ $\Gamma_1/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.15 ± 0.06	MANLEY 92	IPWA	$\pi N \rightarrow \pi N$ & $N\pi\pi$
0.12 ± 0.03	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$
0.10 ± 0.04	HOEHLER 79	IPWA	$\pi N \rightarrow \pi N$

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

0.02 ± 0.05	VRANA 00	DPWA	Multichannel
0.11 ± 0.07	BATINIC 95	DPWA	$\pi N \rightarrow N\pi$ , $N\eta$

### $\Gamma(N\eta)/\Gamma_{\text{total}}$ $\Gamma_2/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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**0.61 ± 0.61** VRANA 00 DPWA Multichannel

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

0.86 ± 0.07	BATINIC 95	DPWA	$\pi N \rightarrow N\pi$ , $N\eta$
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### $\Gamma(\Lambda K)/\Gamma_{\text{total}}$ $\Gamma_3/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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0.21 ± 0.20 VRANA 00 DPWA Multichannel

### $(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow N(2100) \rightarrow \Delta(1232)\pi$ , *P*-wave $(\Gamma_1\Gamma_5)^{1/2}/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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−0.19 ± 0.08 MANLEY 92 IPWA  $\pi N \rightarrow \pi N$  &  $N\pi\pi$

$\Gamma(\Delta(1232)\pi, P\text{-wave})/\Gamma_{\text{total}}$				$\Gamma_5/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.02±0.01	VRANA	00	DPWA	Multichannel

  

$\Gamma(N\rho, S=1/2, P\text{-wave})/\Gamma_{\text{total}}$				$\Gamma_6/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.04±0.01	VRANA	00	DPWA	Multichannel

  

$\Gamma(N(\pi\pi)_{S\text{-wave}}^{I=0})/\Gamma_{\text{total}}$				$\Gamma_7/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.10±0.01	VRANA	00	DPWA	Multichannel

### N(2100) REFERENCES

ABLIKIM	06K	PRL 97 062001	M. Ablikim <i>et al.</i>	(BES Collab.)
ARNDT	06	PR C74 045205	R.A. Arndt <i>et al.</i>	(GWU)
VRANA	00	PRPL 328 181	T.P. Vrana, S.A. Dytman,, T.-S.H. Lee	(PITT+)
PLOETZKE	98	PL B444 555	R. Ploetzke <i>et al.</i>	(Bonn SAPHIR Collab.)
BATINIC	95	PR C51 2310	M. Batinic <i>et al.</i>	(BOSK, UCLA)
Also		PR C57 1004 (erratum)	M. Batinic <i>et al.</i>	
MANLEY	92	PR D45 4002	D.M. Manley, E.M. Saleski	(KENT) IJP
Also		PR D30 904	D.M. Manley <i>et al.</i>	(VPI)
ARNDT	91	PR D43 2131	R.A. Arndt <i>et al.</i>	(VPI, TELE) 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)
HOEHLER	79	PDAT 12-1	G. Hohler <i>et al.</i>	(KARLT) IJP
Also		Toronto Conf. 3	R. Koch	(KARLT) IJP