# $N(2000)$ $F_{15}$

$I(J^P) = \frac{1}{2}(\frac{5}{2}^+)$ Status: **

OMITTED FROM SUMMARY TABLE

Older results have been retained simply because there is little information at all about this possible state.

## $N(2000)$ BREIT-WIGNER MASS

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| **≈ 2000 OUR ESTIMATE** | | | | |
| 1903±87 | MANLEY | 92 | IPWA | $\pi N \to \pi N$ & $N\pi\pi$ |
| 1882±10 | HOEHLER | 79 | IPWA | $\pi N \to \pi N$ |
| 2025 | AYED | 76 | IPWA | $\pi N \to \pi N$ |
| 1970 | [1] LANGBEIN | 73 | IPWA | $\pi N \to \Sigma K$ (sol. 2) |
| 2175 | ALMEHED | 72 | IPWA | $\pi N \to \pi N$ |
| 1930 | DEANS | 72 | MPWA | $\gamma p \to \Lambda K$ (sol. D) |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| 1814 | ARNDT | 95 | DPWA | $\pi N \to N\pi$ |

## $N(2000)$ BREIT-WIGNER WIDTH

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| 490±310 | MANLEY | 92 | IPWA | $\pi N \to \pi N$ & $N\pi\pi$ |
| 95± 20 | HOEHLER | 79 | IPWA | $\pi N \to \pi N$ |
| 157 | AYED | 76 | IPWA | $\pi N \to \pi N$ |
| 170 | [1] LANGBEIN | 73 | IPWA | $\pi N \to \Sigma K$ (sol. 2) |
| 150 | ALMEHED | 72 | IPWA | $\pi N \to \pi N$ |
| 112 | DEANS | 72 | MPWA | $\gamma p \to \Lambda K$ (sol. D) |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| 176 | ARNDT | 95 | DPWA | $\pi N \to N\pi$ |

## $N(2000)$ DECAY MODES

| | Mode |
|---|---|
| $\Gamma_1$ | $N\pi$ |
| $\Gamma_2$ | $N\eta$ |
| $\Gamma_3$ | $\Lambda K$ |
| $\Gamma_4$ | $\Sigma K$ |
| $\Gamma_5$ | $N\pi\pi$ |
| $\Gamma_6$ | $\Delta(1232)\pi$, $P$-wave |
| $\Gamma_7$ | $N\rho$, $S$=3/2, $P$-wave |
| $\Gamma_8$ | $N\rho$, $S$=3/2, $F$-wave |
| $\Gamma_9$ | $p\gamma$ |

## $N(2000)$ BRANCHING RATIOS

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

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| $0.08 \pm 0.05$ | MANLEY | 92 | IPWA | $\pi N \to \pi N$ & $N\pi\pi$ |
| $0.04 \pm 0.02$ | HOEHLER | 79 | IPWA | $\pi N \to \pi N$ |
| 0.08 | AYED | 76 | IPWA | $\pi N \to \pi N$ |
| 0.25 | ALMEHED | 72 | IPWA | $\pi N \to \pi N$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| 0.10 | ARNDT | 95 | DPWA | $\pi N \to N\pi$ |

### $(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(2000) \to N\eta$ $(\Gamma_1\Gamma_2)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| $+0.03$ | BAKER | 79 | DPWA | $\pi^- p \to n\eta$ |

### $(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(2000) \to \Lambda K$ $(\Gamma_1\Gamma_3)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| not seen | SAXON | 80 | DPWA | $\pi^- p \to \Lambda K^0$ |

### $(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(2000) \to \Sigma K$ $(\Gamma_1\Gamma_4)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 0.022 | [2] DEANS | 75 | DPWA | $\pi N \to \Sigma K$ |
| 0.05 | [1] LANGBEIN | 73 | IPWA | $\pi N \to \Sigma K$ (sol. 2) |

### $(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(2000) \to \Delta(1232)\pi$, $P$-wave $(\Gamma_1\Gamma_6)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| $+0.10 \pm 0.06$ | MANLEY | 92 | IPWA | $\pi N \to \pi N$ & $N\pi\pi$ |

### $(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(2000) \to N\rho$, $S$=3/2, $P$-wave $(\Gamma_1\Gamma_7)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| $-0.22 \pm 0.08$ | MANLEY | 92 | IPWA | $\pi N \to \pi N$ & $N\pi\pi$ |

### $(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(2000) \to N\rho$, $S$=3/2, $F$-wave $(\Gamma_1\Gamma_8)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| $+0.11 \pm 0.06$ | MANLEY | 92 | IPWA | $\pi N \to \pi N$ & $N\pi\pi$ |

### $(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $p\gamma \to N(2000) \to \Lambda K$ $(\Gamma_9\Gamma_3)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 0.0022 | DEANS | 72 | MPWA | $\gamma p \to \Lambda K$ (sol. D) |

## $N(2000)$ FOOTNOTES

[1] Not seen in solution 1 of LANGBEIN 73.
[2] Value given is from solution 1 of DEANS 75; not present in solutions 2, 3, or 4.

## *N*(2000) REFERENCES


| | | | | |
|---|---|---|---|---|
| ARNDT | 95 | PR C52 2120 | R.A. Arndt *et al.* | (VPI, BRCO) |
| MANLEY | 92 | PR D45 4002 | D.M. Manley, E.M. Saleski | (KENT) IJP |
| Also | 84 | PR D30 904 | D.M. Manley *et al.* | (VPI) |
| SAXON | 80 | NP B162 522 | D.H. Saxon *et al.* | (RHEL, BRIS) IJP |
| BAKER | 79 | NP B156 93 | R.D. Baker *et al.* | (RHEL) IJP |
| HOEHLER | 79 | PDAT 12-1 | G. Hohler *et al.* | (KARLT) IJP |
| Also | 80 | Toronto Conf. 3 | R. Koch | (KARLT) IJP |
| AYED | 76 | Thesis CEA-N-1921 | R. Ayed | (SACL) IJP |
| DEANS | 75 | NP B96 90 | S.R. Deans *et al.* | (SFLA, ALAH) IJP |
| LANGBEIN | 73 | NP B53 251 | W. Langbein, F. Wagner | (MUNI) IJP |
| ALMEHED | 72 | NP B40 157 | S. Almehed, C. Lovelace | (LUND, RUTG) IJP |
| DEANS | 72 | PR D6 1906 | S.R. Deans *et al.* | (SFLA) IJP |