## $N(2700)$ $K_{1,13}$

$I(J^P) = \frac{1}{2}(\frac{13}{2}^+)$ Status: ∗∗

OMITTED FROM SUMMARY TABLE

### N(2700) MASS

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **≈ 2700 OUR ESTIMATE** | | | | |
| 2612± 45 | HOEHLER | 79 | IPWA | $\pi N \to \pi N$ |
| 3000±100 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ |

### N(2700) WIDTH

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 350± 50 | HOEHLER | 79 | IPWA | $\pi N \to \pi N$ |
| 900±150 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ |

### N(2700) DECAY MODES

| | Mode |
|---|---|
| $\Gamma_1$ | $N\pi$ |

### N(2700) BRANCHING RATIOS

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

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 0.04±0.01 | HOEHLER | 79 | IPWA | $\pi N \to \pi N$ |
| 0.07±0.02 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ |

### N(2700) REFERENCES


| | | | | |
|---|---|---|---|---|
| HOEHLER | 79 | PDAT 12-1 | +Kaiser, Koch, Pietarinen | (KARLT) IJP |
| Also | 80 | Toronto Conf. 3 | Koch | (KARLT) IJP |
| HENDRY | 78 | PRL 41 222 | | (IND, LBL) IJP |
| Also | 81 | ANP 136 1 | Hendry | (IND) |


## $N(\sim 3000$ Region) Partial-Wave Analyses

OMITTED FROM SUMMARY TABLE

We list here miscellaneous high-mass candidates for isospin-1/2 resonances found in partial-wave analyses.

Our 1982 edition had an $N(3245)$, an $N(3690)$, and an $N(3755)$, each a narrow peak seen in a production experiment. Since nothing has been heard from them since the 1960's, we declare them to be dead. There was also an $N(3030)$, deduced from total cross-section and 180° elastic cross-section measurements; it is the KOCH 80 $L_{1,15}$ state below.

### N(∼ 3000) MASS

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **≈ 3000 OUR ESTIMATE** | | | | |
| 2600 | KOCH | 80 | IPWA | $\pi N \to \pi N$ $D_{13}$ |
| 3100 | KOCH | 80 | IPWA | $\pi N \to \pi N$ $L_{1,15}$ wave |
| 3500 | KOCH | 80 | IPWA | $\pi N \to \pi N$ $M_{1,17}$ wave |
| 3500 to 4000 | KOCH | 80 | IPWA | $\pi N \to \pi N$ $N_{1,19}$ wave |
| 3500±200 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $L_{1,15}$ wave |
| 3800±200 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $M_{1,17}$ wave |
| 4100±200 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $N_{1,19}$ wave |

### N(∼ 3000) WIDTH

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 1300±200 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $L_{1,15}$ wave |
| 1600±200 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $M_{1,17}$ wave |
| 1900±300 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $N_{1,19}$ wave |

### N(∼ 3000) DECAY MODES

| | Mode |
|---|---|
| $\Gamma_1$ | $N\pi$ |

### N(∼ 3000) BRANCHING RATIOS

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

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 0.055±0.02 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $L_{1,15}$ wave |
| 0.040±0.015 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $M_{1,17}$ wave |
| 0.030±0.015 | HENDRY | 78 | MPWA | $\pi N \to \pi N$ $N_{1,19}$ wave |

### N(∼ 3000) REFERENCES


| | | | | |
|---|---|---|---|---|
| KOCH | 80 | Toronto Conf. 3 | | (KARLT) IJP |
| HENDRY | 78 | PRL 41 222 | | (IND, LBL) IJP |
| Also | 81 | ANP 136 1 | Hendry | (IND) IJP |


# Δ BARYONS
## $(S = 0,\ I = 3/2)$

$\Delta^{++} = uuu$, $\Delta^{+} = uud$, $\Delta^{0} = udd$, $\Delta^{-} = ddd$

## $\Delta(1232)$ $P_{33}$

$I(J^P) = \frac{3}{2}(\frac{3}{2}^+)$ Status: ∗∗∗∗

Most of the results published before 1977 are now obsolete and have been omitted. They may be found in our 1982 edition, Physics Letters **111B** (1982).

### Δ(1232) MASSES

#### MIXED CHARGES

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **1230 to 1234 (≈ 1232) OUR ESTIMATE** | | | | |
| 1231±1 | MANLEY | 92 | IPWA | $\pi N \to \pi N$ & $N\pi\pi$ |
| 1232±3 | CUTKOSKY | 80 | IPWA | $\pi N \to \pi N$ |
| 1233±2 | HOEHLER | 79 | IPWA | $\pi N \to \pi N$ |

#### $\Delta(1232)^{++}$ MASS

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 1230.9±0.3 | KOCH | 80B | IPWA | $\pi N \to \pi N$ |
| 1230.6±0.2 | ZIDELL | 80 | DPWA | $\pi N \to \pi N$ 0–350 MeV |
| 1231.1±0.2 | PEDRONI | 78 | | $\pi N \to \pi N$ 70–370 MeV |

#### $\Delta(1232)^{+}$ MASS

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 1234.9±1.4 | MIROSHNIC... | 79 | | Fit photoproduction |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| 1231.6 | CRAWFORD | 80 | DPWA | $\gamma N \to \pi N$ |
| 1231.2 | BARBOUR | 78 | DPWA | $\gamma N \to \pi N$ |
| 1231.8 | BERENDS | 75 | IPWA | $\gamma p \to \pi N$ |

#### $\Delta(1232)^{0}$ MASS

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 1233.6±0.5 | KOCH | 80B | IPWA | $\pi N \to \pi N$ |
| 1232.5±0.3 | ZIDELL | 80 | DPWA | $\pi N \to \pi N$ 0–350 MeV |
| 1233.8±0.2 | PEDRONI | 78 | | $\pi N \to \pi N$ 70–370 MeV |

### $m_{\Delta^0} - m_{\Delta^+}$

| VALUE (MeV) | DOCUMENT ID | | COMMENT |
|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 2.7±0.3 | [1] PEDRONI | 78 | See the masses |

### Δ(1232) WIDTHS

#### MIXED CHARGES

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **115 to 125 (≈ 120) OUR ESTIMATE** | | | | |
| 118±4 | MANLEY | 92 | IPWA | $\pi N \to \pi N$ & $N\pi\pi$ |
| 120±5 | CUTKOSKY | 80 | IPWA | $\pi N \to \pi N$ |
| 116±5 | HOEHLER | 79 | IPWA | $\pi N \to \pi N$ |

#### $\Delta(1232)^{++}$ WIDTH

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| 111.0±1.0 | KOCH | 80B | IPWA | $\pi N \to \pi N$ |
| 113.2±0.3 | ZIDELL | 80 | DPWA | $\pi N \to \pi N$ 0–350 MeV |
| 111.3±0.5 | PEDRONI | 78 | | $\pi N \to \pi N$ 70–370 MeV |