# $\Sigma(2070)$ $F_{15}$

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

OMITTED FROM SUMMARY TABLE

This state suggested by BERTHON 70B finds support in GOPAL 80 with new $K^- p$ polarization and $K^- n$ angular distributions. The very broad state seen in KANE 72 is not required in the later (KANE 74) analysis of $\overline{K} N \rightarrow \Sigma \pi$.

## $\Sigma(2070)$ MASS

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| **≈ 2070 OUR ESTIMATE** | | | | |
| $2051 \pm 25$ | GOPAL | 80 | DPWA | $\overline{K} N \rightarrow \overline{K} N$ |
| 2057 | KANE | 72 | DPWA | $K^- p \rightarrow \Sigma \pi$ |
| $2070 \pm 10$ | BERTHON | 70B | DPWA | $K^- p \rightarrow \Sigma \pi$ |

## $\Sigma(2070)$ WIDTH

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| $300 \pm 30$ | GOPAL | 80 | DPWA | $\overline{K} N \rightarrow \overline{K} N$ |
| 906 | KANE | 72 | DPWA | $K^- p \rightarrow \Sigma \pi$ |
| $140 \pm 20$ | BERTHON | 70B | DPWA | $K^- p \rightarrow \Sigma \pi$ |

## $\Sigma(2070)$ DECAY MODES

| | Mode |
|---|---|
| $\Gamma_1$ | $N \overline{K}$ |
| $\Gamma_2$ | $\Sigma \pi$ |

## $\Sigma(2070)$ BRANCHING RATIOS

See "Sign conventions for resonance couplings" in the Note on $\Lambda$ and $\Sigma$ Resonances.

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

| *VALUE* | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| $0.08 \pm 0.03$ | GOPAL | 80 | DPWA | $\overline{K} N \rightarrow \overline{K} N$ |

### $(\Gamma_i \Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \rightarrow \Sigma(2070) \rightarrow \Sigma\pi$ $(\Gamma_1 \Gamma_2)^{1/2}/\Gamma$

| *VALUE* | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| $+0.104$ | KANE | 72 | DPWA | $K^- p \rightarrow \Sigma \pi$ |
| $+0.12 \pm 0.02$ | BERTHON | 70B | DPWA | $K^- p \rightarrow \Sigma \pi$ |

## Σ(2070) REFERENCES


| | | | | |
|---|---|---|---|---|
| GOPAL | 80 | Toronto Conf. 159 | | (RHEL) IJP |
| KANE | 74 | LBL-2452 | | (LBL) |
| KANE | 72 | PR D5 1583 | | (LBL) |
| BERTHON | 70B | NP B24 417 | +Vrana, Butterworth+ | (CDEF, RHEL, SACL) IJP |