# $\Lambda(2020)$ $F_{07}$

$I(J^P) = 0(\frac{7}{2}^+)$ Status: *

OMITTED FROM SUMMARY TABLE

In LITCHFIELD 71, need for the state rests solely on a possibly inconsistent polarization measurement at 1.784 GeV/$c$. HEMINGWAY 75 does not require this state. GOPAL 77 does not need it in either $N\overline{K}$ or $\Sigma\pi$. With new $K^-n$ angular distributions included, DECLAIS 77 sees it. However, this and other new data are included in GOPAL 80 and the state is not required. BACCARI 77 weakly supports it.

## $\Lambda(2020)$ MASS

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| **≈ 2020 OUR ESTIMATE** | | | | |
| 2140 | BACCARI | 77 | DPWA | $K^-p \to \Lambda\omega$ |
| 2117 | DECLAIS | 77 | DPWA | $\overline{K}N \to \overline{K}N$ |
| 2100 ± 30 | LITCHFIELD | 71 | DPWA | $K^-p \to \overline{K}N$ |
| 2020 ± 20 | BARBARO-... | 70 | DPWA | $K^-p \to \Sigma\pi$ |

## $\Lambda(2020)$ WIDTH

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| 128 | BACCARI | 77 | DPWA | $K^-p \to \Lambda\omega$ |
| 167 | DECLAIS | 77 | DPWA | $\overline{K}N \to \overline{K}N$ |
| 120 ± 30 | LITCHFIELD | 71 | DPWA | $K^-p \to \overline{K}N$ |
| 160 ± 30 | BARBARO-... | 70 | DPWA | $K^-p \to \Sigma\pi$ |

## $\Lambda(2020)$ DECAY MODES

| | Mode |
|---|---|
| $\Gamma_1$ | $N\overline{K}$ |
| $\Gamma_2$ | $\Sigma\pi$ |
| $\Gamma_3$ | $\Lambda\omega$ |

## $\Lambda(2020)$ 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* |
|---|---|---|---|---|
| 0.05 | DECLAIS | 77 | DPWA | $\overline{K}N \to \overline{K}N$ |
| 0.05 ± 0.02 | LITCHFIELD | 71 | DPWA | $K^-p \to \overline{K}N$ |

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(2020) \to \Sigma\pi$ $(\Gamma_1\Gamma_2)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| $-0.15 \pm 0.02$ | BARBARO-... | 70 | DPWA | $K^- p \to \Sigma\pi$ |

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(2020) \to \Lambda\omega$ $(\Gamma_1\Gamma_3)^{1/2}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| $<0.05$ | BACCARI | 77 | DPWA | $K^- p \to \Lambda\omega$ |

## $\Lambda(2020)$ REFERENCES


| | | | | |
|---|---|---|---|---|
| GOPAL | 80 | Toronto Conf. 159 | G.P. Gopal | (RHEL) |
| BACCARI | 77 | NC 41A 96 | B. Baccari *et al.* | (SACL, CDEF) IJP |
| DECLAIS | 77 | CERN 77-16 | Y. Declais *et al.* | (CAEN, CERN) IJP |
| GOPAL | 77 | NP B119 362 | G.P. Gopal *et al.* | (LOIC, RHEL) |
| HEMINGWAY | 75 | NP B91 12 | R.J. Hemingway *et al.* | (CERN, HEIDH, MPIM) IJP |
| LITCHFIELD | 71 | NP B30 125 | P.J. Litchfield *et al.* | (RHEL, CDEF, SACL) IJP |
| BARBARO-... | 70 | Duke Conf. 173 | A. Barbaro-Galtieri | (LRL) IJP |

Hyperon Resonances, 1970