

$\Lambda(2020) 7/2^+$

$I(J^P) = 0(\frac{7}{2}^+)$ 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 $N\bar{K}$ 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

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

$\Lambda(2020)$ WIDTH

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
128	BACCARI 77	DPWA	$K^-p \rightarrow \Lambda\omega$
167	DECLAIS 77	DPWA	$\bar{K}N \rightarrow \bar{K}N$
120 ± 30	LITCHFIELD 71	DPWA	$K^-p \rightarrow \bar{K}N$
160 ± 30	BARBARO-...	70	DPWA $K^-p \rightarrow \Sigma\pi$

$\Lambda(2020)$ DECAY MODES

Mode
Γ_1 $N\bar{K}$
Γ_2 $\Sigma\pi$
Γ_3 $\Lambda\omega$

$\Lambda(2020)$ BRANCHING RATIOS

See "Sign conventions for resonance couplings" in the Note on Λ and Σ Resonances.

$\Gamma(N\bar{K})/\Gamma_{\text{total}}$	Γ_1/Γ		
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.05	DECLAIS 77	DPWA	$\bar{K}N \rightarrow \bar{K}N$
0.05 ± 0.02	LITCHFIELD 71	DPWA	$K^-p \rightarrow \bar{K}N$

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Lambda(2020) \rightarrow \Sigma \pi$	$(\Gamma_1 \Gamma_2)^{1/2} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
-0.15 ± 0.02	BARBARO-... 70	DPWA	$K^- p \rightarrow \Sigma \pi$

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Lambda(2020) \rightarrow \Lambda \omega$	$(\Gamma_1 \Gamma_3)^{1/2} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
< 0.05	BACCARI 77	DPWA	$K^- p \rightarrow \Lambda \omega$

$\Lambda(2020)$ REFERENCES

GOPAL 80	Toronto Conf. 159	G.P. Gopal	(RHEL)
BACCARI 77	NC 41A 96	B. Baccari <i>et al.</i>	(SACL, CDEF) IJP
DECLAIS 77	CERN 77-16	Y. Declais <i>et al.</i>	(CAEN, CERN) IJP
GOPAL 77	NP B119 362	G.P. Gopal <i>et al.</i>	(LOIC, RHEL)
HEMINGWAY 75	NP B91 12	R.J. Hemingway <i>et al.</i>	(CERN, HEIDH, MPIM) IJP
LITCHFIELD 71	NP B30 125	P.J. Litchfield <i>et al.</i>	(RHEL, CDEF, SACL) IJP
BARBARO-... 70	Duke Conf. 173	A. Barbaro-Galtieri	(LRL) IJP
Hyperon Resonances, 1970			