

$\Lambda(2000) \ 1/2^-$

$I(J^P) = 0(\frac{1}{2}^-)$ Status: *

OMITTED FROM SUMMARY TABLE
BARBARO-GALTIERI 70 (in $\Sigma\pi$) and BRANDSTETTER 72 (in $\Lambda\omega$) proposed a state at about this mass. Those analyses are considered to be obsolete, see NAKKASYAN 75 and PDG 18.

$\Lambda(2000)$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
≈ 2000 OUR ESTIMATE			
2020 ± 16	ZHANG	13A	DPWA Multichannel
2030 ± 30	CAMERON	78B	DPWA $K^- p \rightarrow N \bar{K}^*$

$\Lambda(2000)$ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
255 ± 63	ZHANG	13A	DPWA Multichannel
125 ± 25	CAMERON	78B	DPWA $K^- p \rightarrow N \bar{K}^*$

$\Lambda(2000)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \ N \bar{K}$	$(27 \pm 6) \%$
$\Gamma_2 \ \Sigma \pi$	
$\Gamma_3 \ \Lambda \eta$	$(16 \pm 7) \%$
$\Gamma_4 \ N \bar{K}^*(892), S=1/2, S\text{-wave}$	
$\Gamma_5 \ N \bar{K}^*(892), S=3/2, D\text{-wave}$	

$\Lambda(2000)$ 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
VALUE	DOCUMENT ID	TECN	COMMENT	
0.27 ± 0.06	ZHANG	13A	DPWA Multichannel	
$(\Gamma_i \Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Lambda(2000) \rightarrow \Sigma \pi$				$(\Gamma_1 \Gamma_2)^{1/2}/\Gamma$
VALUE	DOCUMENT ID	TECN	COMMENT	
-0.07 ± 0.03	ZHANG	13A	DPWA Multichannel	
$\Gamma(\Lambda\eta)/\Gamma_{\text{total}}$				Γ_3/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
0.16 ± 0.07	ZHANG	13A	DPWA Multichannel	

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Lambda(2000) \rightarrow N\bar{K}^*(892), S=1/2, S\text{-wave } (\Gamma_1 \Gamma_4)^{1/2} / \Gamma$			
VALUE	DOCUMENT ID	TECN	COMMENT
-0.12 ± 0.03	¹ CAMERON	78B	DPWA $K^- p \rightarrow N\bar{K}^*$

¹ The published sign has been changed to be in accord with the baryon-first convention.

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Lambda(2000) \rightarrow N\bar{K}^*(892), S=3/2, D\text{-wave } (\Gamma_1 \Gamma_5)^{1/2} / \Gamma$			
VALUE	DOCUMENT ID	TECN	COMMENT
$+0.34 \pm 0.05$	ZHANG	13A	DPWA Multichannel
$+0.09 \pm 0.03$	CAMERON	78B	DPWA $K^- p \rightarrow N\bar{K}^*$

$\Lambda(2000)$ REFERENCES

PDG	18	PR D98 030001	M. Tanabashi <i>et al.</i>	(PDG Collab.)
ZHANG	13A	PR C88 035205	H. Zhang <i>et al.</i>	(KSU)
CAMERON	78B	NP B146 327	W. Cameron <i>et al.</i>	(RHEL, LOIC) IJP
NAKKASYAN	75	NP B93 85	A. Nakkasyan	(CERN) IJP
BRANDSTET...	72	NP B39 13	A.A. Brandstetter <i>et al.</i>	(RHEL, CDEF+)
BARBARO-...	70	Duke Conf. 173	A. Barbaro-Galtieri	(LRL) IJP
Hyperon Resonances, 1970				