

$\Sigma(2000) S_{11}$

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

OMITTED FROM SUMMARY TABLE

We list here all reported S_{11} states lying above the $\Sigma(1750) S_{11}$.

$\Sigma(2000)$ MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
≈ 2000 OUR ESTIMATE			
1944 ± 15	GOPAL	80	DPWA $\bar{K}N \rightarrow \bar{K}N$
1955 ± 15	GOPAL	77	DPWA $\bar{K}N$ multichannel
1755 or 1834	¹ MARTIN	77	DPWA $\bar{K}N$ multichannel
2004 ± 40	VANHORN	75	DPWA $K^- p \rightarrow \Lambda \pi^0$

$\Sigma(2000)$ WIDTH

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
215 ± 25	GOPAL	80	DPWA $\bar{K}N \rightarrow \bar{K}N$
170 ± 40	GOPAL	77	DPWA $\bar{K}N$ multichannel
413 or 450	¹ MARTIN	77	DPWA $\bar{K}N$ multichannel
116 ± 40	VANHORN	75	DPWA $K^- p \rightarrow \Lambda \pi^0$

$\Sigma(2000)$ DECAY MODES

Mode
Γ_1 $N\bar{K}$
Γ_2 $\Lambda\pi$
Γ_3 $\Sigma\pi$
Γ_4 $\Lambda(1520)\pi$
Γ_5 $N\bar{K}^*(892)$, $S=1/2$, S -wave
Γ_6 $N\bar{K}^*(892)$, $S=3/2$, D -wave

$\Sigma(2000)$ BRANCHING RATIOS

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

$\Gamma(N\bar{K})/\Gamma_{\text{total}}$	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_1/Γ
<u>VALUE</u>				
0.51 ± 0.05	GOPAL	80	DPWA $\bar{K}N \rightarrow \bar{K}N$	
0.44 ± 0.05	GOPAL	77	DPWA See GOPAL 80	
0.62 or 0.57	¹ MARTIN	77	DPWA $\bar{K}N$ multichannel	

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(2000) \rightarrow \Lambda\pi$	$(\Gamma_1 \Gamma_2)^{1/2} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
0.08 ± 0.03	GOPAL	77	DPWA $\bar{K}N$ multichannel
-0.19 or -0.18	¹ MARTIN	77	DPWA $\bar{K}N$ multichannel
not seen	BAILLON	75	IPWA $\bar{K}N \rightarrow \Lambda\pi$
$+0.07^{+0.02}_{-0.01}$	VANHORN	75	DPWA $K^- p \rightarrow \Lambda\pi^0$

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(2000) \rightarrow \Sigma\pi$	$(\Gamma_1 \Gamma_3)^{1/2} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
$+0.20 \pm 0.04$	GOPAL	77	DPWA $\bar{K}N$ multichannel
$+0.26$ or $+0.24$	¹ MARTIN	77	DPWA $\bar{K}N$ multichannel

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(2000) \rightarrow \Lambda(1520)\pi$	$(\Gamma_1 \Gamma_4)^{1/2} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
$+0.081 \pm 0.021$	² CAMERON	77	DPWA P -wave decay

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(2000) \rightarrow N\bar{K}^*(892), S=1/2, S\text{-wave}$	$(\Gamma_1 \Gamma_5)^{1/2} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
$+0.10 \pm 0.02$	² CAMERON	78B	DPWA $K^- p \rightarrow N\bar{K}^*$

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(2000) \rightarrow N\bar{K}^*(892), S=3/2, D\text{-wave}$	$(\Gamma_1 \Gamma_6)^{1/2} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
-0.07 ± 0.03	CAMERON	78B	DPWA $K^- p \rightarrow N\bar{K}^*$

$\Sigma(2000)$ FOOTNOTES

- ¹ The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit.
² The published sign has been changed to be in accord with the baryon-first convention.

$\Sigma(2000)$ REFERENCES

GOPAL	80	Toronto Conf.	159	(RHEL) IJP
CAMERON	78B	NP B146	327	+Franeek, Gopal, Kalmus, McPherson+ (RHEL, LOIC) IJP
CAMERON	77	NP B131	399	+Franeek, Gopal, Kalmus, McPherson+ (RHEL, LOIC) IJP
GOPAL	77	NP B119	362	+Ross, VanHorn, McPherson+ (LOIC, RHEL) IJP
MARTIN	77	NP B127	349	+Pidcock, Moorhouse (LOUC, GLAS) IJP
Also	77B	NP B126	266	Martin, Pidcock (LOUC)
Also	77C	NP B126	285	Martin, Pidcock (LOUC) IJP
BAILLON	75	NP B94	39	+Litchfield (CERN, RHEL) IJP
VANHORN	75	NP B87	145	(LBL) IJP
Also	75B	NP B87	157	VanHorn (LBL) IJP