$\Sigma(2000)\ S_{11}$

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

OMITTED FROM SUMMARY TABLE

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

$\Sigma(2000)$ MASS

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

$\Sigma(2000)$ WIDTH

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

$\Sigma(2000)$ DECAY MODES

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

$\Sigma(2000)$ BRANCHING RATIOS

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

$\Gamma(N\overline{K})/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.51 ± 0.05	GOPAL	80	DPWA	$\overline{K}N \rightarrow \overline{K}N$
0.44 ± 0.05	GOPAL	77	DPWA	See GOPAL 80
0.62 or 0.57	[1] MARTIN	77	DPWA	$\overline{K}N$ multichannel

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Sigma(2000) \to \Lambda\pi$ $(\Gamma_1\Gamma_2)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
0.08 ± 0.03	GOPAL	77	DPWA	$\overline{K}N$ multichannel
-0.19 or -0.18	[1] MARTIN	77	DPWA	$\overline{K}N$ multichannel
not seen	BAILLON	75	IPWA	$\overline{K}N \to \Lambda\pi$
$+0.07^{+0.02}_{-0.01}$	VANHORN	75	DPWA	$K^- p \to \Lambda\pi^0$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Sigma(2000) \to \Sigma\pi$ $(\Gamma_1\Gamma_3)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
$+0.20 \pm 0.04$	GOPAL	77	DPWA	$\overline{K}N$ multichannel
$+0.26$ or $+0.24$	[1] MARTIN	77	DPWA	$\overline{K}N$ multichannel

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Sigma(2000) \to \Lambda(1520)\pi$ $(\Gamma_1\Gamma_4)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
$+0.081 \pm 0.021$	[2] CAMERON	77	DPWA	P-wave decay

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Sigma(2000) \to N\overline{K}^*(892)$, S=1/2, S-wave $(\Gamma_1\Gamma_5)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
$+0.10 \pm 0.02$	[2] CAMERON	78B	DPWA	$K^- p \to N\overline{K}^*$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Sigma(2000) \to N\overline{K}^*(892)$, S=3/2, D-wave $(\Gamma_1\Gamma_6)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
-0.07 ± 0.03	CAMERON	78B	DPWA	$K^- p \to N\overline{K}^*$

$\Sigma(2000)$ 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	+Franek, Gopal, Kalmus, McPherson+	(RHEL, LOIC) IJP
CAMERON	77	NP B131 399	+Franek, 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