NODE=B100

$\Sigma(1770)\ 1/2^+$

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

OMITTED FROM SUMMARY TABLE

Evidence for this state now rests solely on solution 1 of BAILLON 75, (see the footnotes) but the $\Lambda\pi$ partial-wave amplitudes of this solution are in disagreement with amplitudes from most other $\Lambda\pi$ analyses. NODE=B100

$\Sigma(1770)$ MASS

NODE=B100M

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
NODE=B100M				
≈ 1770 OUR ESTIMATE				→ UNCHECKED ←
1738±10	[1] GOPAL	77	DPWA	$\overline{K}N$ multichannel
1770±20	[2] BAILLON	75	IPWA	$\overline{K}N \to \Lambda\pi$
1772	[3] KANE	72	DPWA	$K^-p \to \Sigma\pi$

$\Sigma(1770)$ WIDTH

NODE=B100W

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
NODE=B100W				
72±10	[1] GOPAL	77	DPWA	$\overline{K}N$ multichannel
80±30	[2] BAILLON	75	IPWA	$\overline{K}N \to \Lambda\pi$
80	[3] KANE	72	DPWA	$K^-p \to \Sigma\pi$

$\Sigma(1770)$ DECAY MODES

NODE=B100215;NODE=B100

	Mode	
Γ_1	$N\overline{K}$	DESIG=1
Γ_2	$\Lambda\pi$	DESIG=2
Γ_3	$\Sigma\pi$	DESIG=3

$\Sigma(1770)$ BRANCHING RATIOS

NODE=B100220

See "Sign conventions for resonance couplings" in the Note on Λ and Σ Resonances. NODE=B100220

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

NODE=B100R1

VALUE	DOCUMENT ID		TECN	COMMENT
NODE=B100R1				
0.14±0.04	[1] GOPAL	77	DPWA	$\overline{K}N$ multichannel

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Sigma(1770) \to \Lambda\pi$ — $(\Gamma_1\Gamma_2)^{1/2}/\Gamma$

NODE=B100R2

VALUE	DOCUMENT ID		TECN	COMMENT
NODE=B100R2				
< 0.04	GOPAL	77	DPWA	$\overline{K}N$ multichannel
−0.08±0.02	[2] BAILLON	75	IPWA	$\overline{K}N \to \Lambda\pi$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Sigma(1770) \to \Sigma\pi$ — $(\Gamma_1\Gamma_3)^{1/2}/\Gamma$

NODE=B100R3

VALUE	DOCUMENT ID		TECN	COMMENT
NODE=B100R3				
< 0.04	GOPAL	77	DPWA	$\overline{K}N$ multichannel
−0.108	[3] KANE	72	DPWA	$K^-p \to \Sigma\pi$

$\Sigma(1770)$ FOOTNOTES

NODE=B100

[1] Required to fit the isospin-1 total cross section of CARROLL 76 in the $\overline{K}N$ channel. The addition of new K^-p polarization and K^-n differential cross-section data in GOPAL 80 find it to be more consistent with the $\Sigma(1660)\ P_{11}$. NODE=B100;LINKAGE=C

[2] From solution 1 of BAILLON 75; not present in solution 2. NODE=B100;LINKAGE=B

[3] Not required in KANE 74, which supersedes KANE 72. NODE=B100;LINKAGE=A

$\Sigma(1770)$ REFERENCES

NODE=B100

GOPAL	80	Toronto Conf. 159	G.P. Gopal	(RHEL)	REFID=31755
GOPAL	77	NP B119 362	G.P. Gopal *et al.*	(LOIC, RHEL) IJP	REFID=31750
CARROLL	76	PRL 37 806	A.S. Carroll *et al.*	(BNL) I	REFID=31760
BAILLON	75	NP B94 39	P.H. Baillon, P.J. Litchfield	(CERN, RHEL) IJP	REFID=32089
KANE	74	LBL-2452	D.F. Kane	(LBL) IJP	REFID=31759
KANE	72	PR D5 1583	D.F.J. Kane	(LBL)	REFID=31880