

$\Sigma(2070) \ 5/2^+$

$I(J^P) = 1(\frac{5}{2}^+)$ Status: *

OMITTED FROM SUMMARY TABLE

This state suggested by BERTHON 70B finds support in GOPAL 80 with new $K^- p$ polarization and $K^- n$ angular distributions. The very broad state seen in KANE 72 is not required in the later (KANE 74) analysis of $\bar{K} N \rightarrow \Sigma \pi$.

$\Sigma(2070)$ MASS			
VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
2020 to 2100 ($\approx$ 2060) OUR ESTIMATE			
2051 $\pm$ 25	GOPAL	80	DPWA $\bar{K} N \rightarrow \bar{K} N$
2070 $\pm$ 10	BERTHON	70B	DPWA $K^- p \rightarrow \Sigma \pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
2057	KANE	72	DPWA $K^- p \rightarrow \Sigma \pi$

$\Sigma(2070)$ WIDTH			
VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
100 to 300 ($\approx$ 200) OUR ESTIMATE			
300 $\pm$ 30	GOPAL	80	DPWA $\bar{K} N \rightarrow \bar{K} N$
140 $\pm$ 20	BERTHON	70B	DPWA $K^- p \rightarrow \Sigma \pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
906	KANE	72	DPWA $K^- p \rightarrow \Sigma \pi$

$\Sigma(2070)$ DECAY MODES	
Mode	
Γ_1	$N \bar{K}$
Γ_2	$\Sigma \pi$

$\Sigma(2070)$ 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
0.08 $\pm$ 0.03	GOPAL	80	DPWA $\bar{K} N \rightarrow \bar{K} N$
$(\Gamma_i \Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(2070) \rightarrow \Sigma \pi$			$(\Gamma_1 \Gamma_2)^{1/2}/\Gamma$
VALUE	DOCUMENT ID	TECN	COMMENT
0.12 $\pm$ 0.02	BERTHON	70B	DPWA $K^- p \rightarrow \Sigma \pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.104	KANE	72	DPWA $K^- p \rightarrow \Sigma \pi$

$\Sigma(2070)$ REFERENCES

GOPAL	80	Toronto Conf. 159	G.P. Gopal	(RHEL) IJP
KANE	74	LBL-2452	D.F. Kane	(LBL)
KANE	72	PR D5 1583	D.F.J. Kane	(LBL)
BERTHON	70B	NP B24 417	A. Berthon <i>et al.</i>	(CDEF, RHEL, SACL) IJP
