

$\Sigma(1780) \ 3/2^+$

$I(J^P) = 1(\frac{3}{2}^+)$ Status: *

OMITTED FROM SUMMARY TABLE
was $\Sigma(1730)$

$\Sigma(1780)$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
1730 to 1830 (≈ 1780) OUR ESTIMATE			
1727 $\pm$ 27	ZHANG	13A	DPWA Multichannel
1798 or 1802	¹ MARTIN	77	DPWA $\overline{K}N$ multichannel
1720 $\pm$ 30	² BAILLON	75	IPWA $\overline{K}N \rightarrow \Lambda\pi$
1840 $\pm$ 10	LANGBEIN	72	IPWA $\overline{K}N$ multichannel

¹ The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit.
² From solution 1 of BAILLON 75; not present in solution 2.

$\Sigma(1780)$ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
100 to 300 (≈ 200) OUR ESTIMATE			
276 $\pm$ 87	ZHANG	13A	DPWA Multichannel
93 or 93	¹ MARTIN	77	DPWA $\overline{K}N$ multichannel
120 $\pm$ 30	² BAILLON	75	IPWA $\overline{K}N \rightarrow \Lambda\pi$
120 $\pm$ 10	LANGBEIN	72	IPWA $\overline{K}N$ multichannel

¹ The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit.
² From solution 1 of BAILLON 75; not present in solution 2.

$\Sigma(1780)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \ N\overline{K}$	(2.0 $\pm$ 1.0) %
$\Gamma_2 \ \Lambda\pi$	(70 $\pm$ 17) %
$\Gamma_3 \ \Sigma\pi$	(12 $\pm$ 6) %

$\Sigma(1780)$ BRANCHING RATIOS

$\Gamma(N\overline{K})/\Gamma_{\text{total}}$					Γ_1/Γ
VALUE	DOCUMENT ID	TECN	COMMENT		
0.02±0.01	ZHANG	13A	DPWA	Multichannel	
$\Gamma(\Lambda\pi)/\Gamma_{\text{total}}$					Γ_2/Γ
VALUE	DOCUMENT ID	TECN	COMMENT		
0.70±0.17	ZHANG	13A	DPWA	Multichannel	

$\Gamma(\Sigma\pi)/\Gamma_{\text{total}}$	Γ_3/Γ		
VALUE	DOCUMENT ID	TECN	COMMENT
0.12±0.06	ZHANG	13A	DPWA Multichannel

$\Sigma(1780)$ REFERENCES

ZHANG	13A	PR C88 035205	H. Zhang <i>et al.</i>	(KSU)
MARTIN	77	NP B127 349	B.R. Martin, M.K. Pidcock, R.G. Moorhouse	(LOUC+)
BAILLON	75	NP B94 39	P.H. Baillon, P.J. Litchfield	(CERN, RHEL)
LANGBEIN	72	NP B47 477	W. Langbein, F. Wagner	(MPIM)