$\Sigma(2100)\ 7/2^-$

$I(J^P) = 1(\frac{7}{2}^-)$ Status: *

OMITTED FROM SUMMARY TABLE

$\Sigma(2100)$ POLE POSITION

REAL PART

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2093±16	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

−2×IMAGINARY PART

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
210±35	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Sigma(2100)$ POLE RESIDUES

Normalized residue in $N\overline{K} \to \Sigma(2100) \to N\overline{K}$

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.09±0.02	**−110 ± 15**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \to \Sigma(2100) \to \Sigma\pi$

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.04±0.02	**−50 ± 20**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \to \Sigma(2100) \to \Lambda\pi$

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.03±0.02	**−100 ± 25**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \to \Sigma(2100) \to \Xi K$

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.010±0.005	**−120 ± 35**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \to \Sigma(2100) \to \Lambda(1520)\pi$, *F*-wave

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.02±0.01	**−100 ± 30**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \to \Sigma(2100) \to \Lambda(1520)\pi$, *H*-wave

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.01±0.01		SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \to \Sigma(2100) \to \Sigma(1385)\pi$, *D*-wave

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.10±0.03	**−60 ± 30**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \to \Sigma(2100) \to \Sigma(1385)\pi$, *G*-wave

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.03±0.01	**−50 ± 30**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \rightarrow \Sigma(2100) \rightarrow \Delta\overline{K}$, *G*-wave

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.04±0.02	**75 ± 35**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \rightarrow \Sigma(2100) \rightarrow N\overline{K}^*(892)$, S=3/2, *D*-wave

MODULUS	*PHASE (°)*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.08±0.04	**20 ± 50**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Sigma(2100)$ MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
≈ 2100 OUR ESTIMATE				
2146±17	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
2060±20	BARBARO-...	70	DPWA	$K^-p \rightarrow \Lambda\pi^0$
2120±30	BARBARO-...	70	DPWA	$K^-p \rightarrow \Sigma\pi$

$\Sigma(2100)$ WIDTH

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
260±40	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
70±30	BARBARO-...	70	DPWA	$K^-p \rightarrow \Lambda\pi^0$
135±30	BARBARO-...	70	DPWA	$K^-p \rightarrow \Sigma\pi$

$\Sigma(2100)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$N\overline{K}$	(8.0±2.0) %
Γ_2	$\Lambda\pi$	(1.5±1.0) %
Γ_3	$\Sigma\pi$	(2.0±1.0) %
Γ_4	ΞK	
Γ_5	$\Sigma(1385)\pi$, *D*-wave	(12 ±6) %
Γ_6	$\Sigma(1385)\pi$, *G*-wave	
Γ_7	$\Lambda(1520)\pi$, *F*-wave	(1.0±1.0) %
Γ_8	$\Lambda(1520)\pi$, *H*-wave	
Γ_9	$N\overline{K}^*(892)$, S=3/2 , *D*-wave	(6.0±3.0) %
Γ_{10}	$\Delta\overline{K}$, *G*-wave	(1.0±1.0) %

$\Sigma(2100)$ BRANCHING RATIOS

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

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \rightarrow \Sigma(2100) \rightarrow \Lambda\pi$ $(\Gamma_1\Gamma_2)^{1/2}/\Gamma$

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
−0.07±0.02	BARBARO-...	70	DPWA	$K^-p \rightarrow \Lambda\pi^0$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Sigma(2100) \to \Sigma\pi$ $(\Gamma_1\Gamma_3)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
$+0.13\pm0.02$	BARBARO-...	70	DPWA	$K^- p \to \Sigma\pi$

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.08±0.02	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(\Lambda\pi)/\Gamma_{total}$ Γ_2/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.015±0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(\Sigma\pi)/\Gamma_{total}$ Γ_3/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.02±0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(\Xi K)/\Gamma_{total}$ Γ_4/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
<0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(\Sigma(1385)\pi$, D-wave$)/\Gamma_{total}$ Γ_5/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.12±0.06	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(\Sigma(1385)\pi$, G-wave$)/\Gamma_{total}$ Γ_6/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
~ 0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(\Lambda(1520)\pi$, F-wave$)/\Gamma_{total}$ Γ_7/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.01±0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(\Lambda(1520)\pi$, H-wave$)/\Gamma_{total}$ Γ_8/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
~ 0	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(N\overline{K}^*(892)$, S=3/2, D-wave$)/\Gamma_{total}$ Γ_9/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.06±0.03	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Gamma(\Delta\overline{K}$, G-wave$)/\Gamma_{total}$ Γ_{10}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.01±0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Sigma(2100)$ REFERENCES

SARANTSEV 19 EPJ A55 180 A.V. Sarantsev *et al.* (BONN, PNPI)
BARBARO-... 70 Duke Conf. 173 A. Barbaro-Galtieri (LRL) IJP
Hyperon Resonances, 1970