

$\Sigma(1900) 1/2^-$  $I(J^P) = 1(\frac{1}{2}^-)$  Status: \*\*

OMITTED FROM SUMMARY TABLE

 $\Sigma(1900)$  POLE POSITION

## REAL PART

VALUE	DOCUMENT ID	TECN	COMMENT
<b>1936±10</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

## -2×IMAGINARY PART

VALUE	DOCUMENT ID	TECN	COMMENT
<b>150±25</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

 $\Sigma(1900)$  POLE RESIDUESThe normalized residue is the residue divided by  $\Gamma_{pole}/2$ .Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow N\bar{K}$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.45±0.09</b>	<b>90 ± 25</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow \Sigma\pi$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.38±0.08</b>	<b>95 ± 20</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow \Sigma\eta$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.03±0.01</b>	<b>20 ± 20</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow \Lambda\pi$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.14±0.05</b>	<b>-160 ± 50</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow \Xi K$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.08±0.05</b>	<b>75 ± 25</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow \Sigma(1385)\pi$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.16±0.05</b>	<b>40 ± 30</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow \Lambda(1520)\pi$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.04±0.02</b>	<b>-25 ± 40</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow \Delta\bar{K}$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.11±0.04</b>	<b>60 ± 30</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

**Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow N\bar{K}^*(892)$ ,  $S=1/2$ ,  $S$ -wave**

<u>MODULUS</u>	<u>PHASE (<math>^\circ</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.17±0.06</b>	<b>50 ± 50</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

**Normalized residue in  $N\bar{K} \rightarrow \Sigma(1900) \rightarrow N\bar{K}^*(892)$ ,  $S=3/2$ ,  $D$ -wave**

<u>MODULUS</u>	<u>PHASE (<math>^\circ</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.05±0.04</b>		SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

 **$\Sigma(1900)$  MASS**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>1900 to 1950 (<math>\approx</math> 1925) OUR ESTIMATE</b>			
1938±12	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel
1900±21	ZHANG 13A	DPWA	$\bar{K}N$ multichannel
1944±15	GOPAL 80	DPWA	$\bar{K}N \rightarrow \bar{K}N$
1755 or 1834	<sup>1</sup> MARTIN 77	DPWA	$\bar{K}N$ multichannel
2004±40	VANHORN 75	DPWA	$K^-p \rightarrow \Lambda\pi^0$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
1955±15	GOPAL 77	DPWA	$\bar{K}N$ multichannel

<sup>1</sup> The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit. **$\Sigma(1900)$  WIDTH**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>140 to 190 (<math>\approx</math> 165) OUR ESTIMATE</b>			
155±30	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel
191±47	ZHANG 13A	DPWA	$\bar{K}N$ multichannel
215±25	GOPAL 80	DPWA	$\bar{K}N \rightarrow \bar{K}N$
413 or 450	<sup>1</sup> MARTIN 77	DPWA	$\bar{K}N$ multichannel
116±40	VANHORN 75	DPWA	$K^-p \rightarrow \Lambda\pi^0$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
170±40	GOPAL 77	DPWA	$\bar{K}N$ multichannel

<sup>1</sup> The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit. **$\Sigma(1900)$  DECAY MODES**

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $N\bar{K}$	0.40 to 0.70 ( $\approx$ 0.55)
$\Gamma_2$ $\Sigma\pi$	0.10 to 0.40 ( $\approx$ 0.25)
$\Gamma_3$ $\Sigma\eta$	(1.0 ±1.0) %
$\Gamma_4$ $\Lambda\pi$	(6.0 ±2.0) %
$\Gamma_5$ $\Xi K$	(3.0 ±2.0) %
$\Gamma_6$ $\Sigma(1385)\pi$	(7.0 ±3.0) %
$\Gamma_7$ $\Lambda(1520)\pi$	
$\Gamma_8$ $\Delta\bar{K}$	(2.5 ±1.0) %
$\Gamma_9$ $N\bar{K}^*(892)$ , $S=1/2$ , $S$ -wave	(7.0 ±3.0) %
$\Gamma_{10}$ $N\bar{K}^*(892)$ , $S=3/2$ , $D$ -wave	

$\Sigma(1900)$  BRANCHING RATIOS

$\Gamma(N\bar{K})/\Gamma_{\text{total}}$				$\Gamma_1/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.40 to 0.70 (<math>\approx 0.55</math>) OUR ESTIMATE</b>				
0.45 $\pm$ 0.09	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
0.67 $\pm$ 0.17	ZHANG	13A	DPWA	$\bar{K}N$ multichannel
$\Gamma(\Sigma\pi)/\Gamma_{\text{total}}$				$\Gamma_2/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.10 to 0.40 (<math>\approx 0.25</math>) OUR ESTIMATE</b>				
0.33 $\pm$ 0.07	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
0.10 $\pm$ 0.05	ZHANG	13A	DPWA	$\bar{K}N$ multichannel
$\Gamma(\Sigma\eta)/\Gamma_{\text{total}}$				$\Gamma_3/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.01<math>\pm</math>0.01</b>				
	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
$\Gamma(\Lambda\pi)/\Gamma_{\text{total}}$				$\Gamma_4/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.06<math>\pm</math>0.02</b>				
	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
$\Gamma(\Xi K)/\Gamma_{\text{total}}$				$\Gamma_5/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.03<math>\pm</math>0.02</b>				
	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
$\Gamma(\Sigma(1385)\pi)/\Gamma_{\text{total}}$				$\Gamma_6/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.07<math>\pm</math>0.03</b>				
	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
$\Gamma(\Lambda(1520)\pi)/\Gamma_{\text{total}}$				$\Gamma_7/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<0.01				
	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
$\Gamma(\Delta\bar{K})/\Gamma_{\text{total}}$				$\Gamma_8/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.025<math>\pm</math>0.010</b>				
	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
$\Gamma(N\bar{K}^*(892), S=1/2, S\text{-wave})/\Gamma_{\text{total}}$				$\Gamma_9/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.07<math>\pm</math>0.03</b>				
	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel
$\Gamma(N\bar{K}^*(892), S=3/2, D\text{-wave})/\Gamma_{\text{total}}$				$\Gamma_{10}/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<0.01				
	SARANTSEV	19	DPWA	$\bar{K}N$ multichannel

 $\Sigma(1900)$  REFERENCES

SARANTSEV	19	EPJ A55 180	A.V. Sarantsev <i>et al.</i>	(BONN, PNPI)
ZHANG	13A	PR C88 035205	H. Zhang <i>et al.</i>	(KSU)
GOPAL	80	Toronto Conf. 159	G.P. Gopal	(RHEL)

GOPAL	77	NP B119 362	G.P. Gopal <i>et al.</i>	(LOIC, RHEL)
MARTIN	77	NP B127 349	B.R. Martin, M.K. Pidcock, R.G. Moorhouse	(LOUC+)
VANHORN	75	NP B87 145	A.J. van Horn	(LBL)

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