

$\Sigma(2100) 7/2^-$  $I(J^P) = 1(\frac{7}{2}^-)$  Status: \*

OMITTED FROM SUMMARY TABLE

 $\Sigma(2100)$  POLE POSITION

## REAL PART

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>2093±16</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

## -2×IMAGINARY PART

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>210±35</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

 $\Sigma(2100)$  POLE RESIDUESNormalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow N\bar{K}$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.09±0.02</b>	<b>-110 ± 15</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Sigma\pi$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.04±0.02</b>	<b>-50 ± 20</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Lambda\pi$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.03±0.02</b>	<b>-100 ± 25</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Xi K$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.010±0.005</b>	<b>-120 ± 35</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Lambda(1520)\pi, F\text{-wave}$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.02±0.01</b>	<b>-100 ± 30</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Lambda(1520)\pi, H\text{-wave}$ 

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

Normalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Sigma(1385)\pi, D\text{-wave}$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.10±0.03</b>	<b>-60 ± 30</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Sigma(1385)\pi, G\text{-wave}$ 

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
<b>0.03±0.01</b>	<b>-50 ± 30</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

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

<u>MODULUS</u>	<u>PHASE (<math>^\circ</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.04±0.02</b>	<b>75 ± 35</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

**Normalized residue in  $N\bar{K} \rightarrow \Sigma(2100) \rightarrow N\bar{K}^*(892)$ , 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>0.08±0.04</b>	<b>20 ± 50</b>	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

 **$\Sigma(2100)$  MASS**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>≈ 2100 OUR ESTIMATE</b>			
2146±17	SARANTSEV 19	DPWA	$\bar{K}N$ 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**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
260±40	SARANTSEV 19	DPWA	$\bar{K}N$ 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 ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $N\bar{K}$	( 8.0±2.0 ) %
$\Gamma_2$ $\Lambda\pi$	( 1.5±1.0 ) %
$\Gamma_3$ $\Sigma\pi$	( 2.0±1.0 ) %
$\Gamma_4$ $\Xi K$	
$\Gamma_5$ $\Sigma(1385)\pi$ , D-wave	(12 ±6 ) %
$\Gamma_6$ $\Sigma(1385)\pi$ , G-wave	
$\Gamma_7$ $\Lambda(1520)\pi$ , F-wave	( 1.0±1.0 ) %
$\Gamma_8$ $\Lambda(1520)\pi$ , H-wave	
$\Gamma_9$ $N\bar{K}^*(892)$ , S=3/2, D-wave	( 6.0±3.0 ) %
$\Gamma_{10}$ $\Delta\bar{K}$ , G-wave	( 1.0±1.0 ) %

 **$\Sigma(2100)$  BRANCHING RATIOS**

See "Sign conventions for resonance couplings" in the Note on  $\Lambda$  and  $\Sigma$  Resonances.

<u><math>(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}</math> in <math>N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Lambda\pi</math></u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	<u><math>(\Gamma_1\Gamma_2)^{1/2}/\Gamma</math></u>
-0.07±0.02	BARBARO-...	70	DPWA $K^- p \rightarrow \Lambda\pi^0$	

$(\Gamma_i \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(2100) \rightarrow \Sigma \pi$	$(\Gamma_1 \Gamma_3)^{1/2} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
$+0.13 \pm 0.02$	BARBARO-... 70	DPWA	$K^- p \rightarrow \Sigma \pi$
$\Gamma(N\bar{K}) / \Gamma_{\text{total}}$	$\Gamma_1 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.08 ± 0.02</b>	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(\Lambda\pi) / \Gamma_{\text{total}}$	$\Gamma_2 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.015 ± 0.01</b>	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(\Sigma\pi) / \Gamma_{\text{total}}$	$\Gamma_3 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.02 ± 0.01</b>	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(\Xi K) / \Gamma_{\text{total}}$	$\Gamma_4 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
<0.01	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(\Sigma(1385)\pi, D\text{-wave}) / \Gamma_{\text{total}}$	$\Gamma_5 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.12 ± 0.06</b>	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(\Sigma(1385)\pi, G\text{-wave}) / \Gamma_{\text{total}}$	$\Gamma_6 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
~ 0.01	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(\Lambda(1520)\pi, F\text{-wave}) / \Gamma_{\text{total}}$	$\Gamma_7 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.01 ± 0.01</b>	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(\Lambda(1520)\pi, H\text{-wave}) / \Gamma_{\text{total}}$	$\Gamma_8 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
~ 0	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(N\bar{K}^*(892), S=3/2, D\text{-wave}) / \Gamma_{\text{total}}$	$\Gamma_9 / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.06 ± 0.03</b>	SARANTSEV 19	DPWA	$\bar{K} N$ multichannel
$\Gamma(\Delta\bar{K}, G\text{-wave}) / \Gamma_{\text{total}}$	$\Gamma_{10} / \Gamma$		
VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.01 ± 0.01</b>	SARANTSEV 19	DPWA	$\bar{K} N$ 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