

$\Sigma(2010) \ 3/2^-$

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

OMITTED FROM SUMMARY TABLE
was $\Sigma(2000)$

$\Sigma(2010)$ POLE POSITION

REAL PART			
VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
1995±12	SARANTSEV 19	DPWA	$\overline{K} N$ multichannel
−2×IMAGINARY PART			
VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
175±24	SARANTSEV 19	DPWA	$\overline{K} N$ multichannel

$\Sigma(2010)$ POLE RESIDUES

The normalized residue is the residue divided by $\Gamma_{pole}/2$.

Normalized residue in $N\overline{K} \rightarrow \Sigma(2010) \rightarrow N\overline{K}$			
MODULUS	PHASE (°)	DOCUMENT ID	TECN COMMENT
0.07±0.03	−115 ± 25	SARANTSEV 19	DPWA $\overline{K} N$ multichannel
Normalized residue in $N\overline{K} \rightarrow \Sigma(2010) \rightarrow \Sigma\pi$			
MODULUS	PHASE (°)	DOCUMENT ID	TECN COMMENT
0.04±0.02	130 ± 22	SARANTSEV 19	DPWA $\overline{K} N$ multichannel
Normalized residue in $N\overline{K} \rightarrow \Sigma(2010) \rightarrow \Lambda\pi$			
MODULUS	PHASE (°)	DOCUMENT ID	TECN COMMENT
0.06±0.03	170 ± 25	SARANTSEV 19	DPWA $\overline{K} N$ multichannel
Normalized residue in $N\overline{K} \rightarrow \Sigma(2010) \rightarrow \Xi K$			
MODULUS	PHASE (°)	DOCUMENT ID	TECN COMMENT
0.04±0.02	−120 ± 45	SARANTSEV 19	DPWA $\overline{K} N$ multichannel
Normalized residue in $N\overline{K} \rightarrow \Sigma(2010) \rightarrow \Lambda(1520)\pi, P\text{-wave}$			
MODULUS	PHASE (°)	DOCUMENT ID	TECN COMMENT
0.03±0.02	80 ± 35	SARANTSEV 19	DPWA $\overline{K} N$ multichannel
Normalized residue in $N\overline{K} \rightarrow \Sigma(2010) \rightarrow \Lambda(1520)\pi, F\text{-wave}$			
MODULUS	PHASE (°)	DOCUMENT ID	TECN COMMENT
0.08±0.05	150 ± 65	SARANTSEV 19	DPWA $\overline{K} N$ multichannel
Normalized residue in $N\overline{K} \rightarrow \Sigma(2010) \rightarrow \Sigma(1385)\pi, P\text{-wave}$			
VALUE	DOCUMENT ID	TECN	COMMENT
0.04+−0.02025+−45	SARANTSEV 19	DPWA	$\overline{K} N$ multichannel

Normalized residue in $N\bar{K} \rightarrow \Sigma(2010) \rightarrow \Sigma(1385)\pi$, F -wave

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.02 ± 0.02	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in $N\bar{K} \rightarrow \Sigma(2010) \rightarrow \Delta\bar{K}$, S -wave

<u>MODULUS</u>	<u>PHASE ($^\circ$)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.08 ± 0.04	0 ± 30	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in $N\bar{K} \rightarrow \Sigma(2010) \rightarrow \Delta\bar{K}$, D -wave

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

Normalized residue in $N\bar{K} \rightarrow \Sigma(2010) \rightarrow N\bar{K}^*(892)$, S -wave

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
$0.12 + 0.03i - 60 + 60$	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in $N\bar{K} \rightarrow \Sigma(2010) \rightarrow N\bar{K}^*(892)$, $S=1/2$, D -wave

<u>MODULUS</u>	<u>PHASE ($^\circ$)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.08 ± 0.04	55 ± 60	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

Normalized residue in $N\bar{K} \rightarrow \Sigma(2010) \rightarrow N\bar{K}^*(892)$, $S=3/2$, D -wave

<u>MODULUS</u>	<u>PHASE ($^\circ$)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.08 ± 0.04	15 ± 60	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

$\Sigma(2010)$ MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2005 ± 14	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

$\Sigma(2010)$ WIDTH

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
178 ± 23	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel

$\Sigma(2010)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $N\bar{K}$	(7.0 ± 3.0) %
Γ_2 $\Lambda\pi$	(5.0 ± 2.0) %
Γ_3 $\Sigma\pi$	(3.0 ± 2.0) %
Γ_4 ΞK	(3.0 ± 2.0) %
Γ_5 $\Sigma(1385)\pi$, P -wave	(3.0 ± 2.0) %
Γ_6 $\Sigma(1385)\pi$, F -wave	(2.0 ± 2.0) %
Γ_7 $\Lambda(1520)\pi$, P -wave	(2.0 ± 2.0) %

Γ_8	$\Lambda(1520)\pi$, F -wave	(12 $\pm$ 6) %
Γ_9	$\Delta\bar{K}$, S -wave	(11 $\pm$ 5) %
Γ_{10}	$\Delta\bar{K}$, D -wave	(1.0 $\pm$ 1.0) %
Γ_{11}	$N\bar{K}^*(892)$, $S=1/2$, S -wave	(27 $\pm$ 7) %
Γ_{12}	$N\bar{K}^*(892)$, $S=1/2$, D -wave	(13 $\pm$ 6) %
Γ_{13}	$N\bar{K}^*(892)$, $S=3/2$, D -wave	(13 $\pm$ 6) %

$\Sigma(2010)$ 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
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.07$\pm$0.03	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(\Lambda\pi)/\Gamma_{\text{total}}$				Γ_2/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.05$\pm$0.02	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(\Sigma\pi)/\Gamma_{\text{total}}$				Γ_3/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.03$\pm$0.02	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(\Xi K)/\Gamma_{\text{total}}$				Γ_4/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.03$\pm$0.02	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(\Sigma(1385)\pi, P\text{-wave})/\Gamma_{\text{total}}$				Γ_5/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.03$\pm$0.02	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(\Sigma(1385)\pi, F\text{-wave})/\Gamma_{\text{total}}$				Γ_6/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.02$\pm$0.02	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(\Lambda(1520)\pi, P\text{-wave})/\Gamma_{\text{total}}$				Γ_7/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.02$\pm$0.02	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(\Lambda(1520)\pi, F\text{-wave})/\Gamma_{\text{total}}$				Γ_8/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.12$\pm$0.06	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(\Delta\bar{K}, S\text{-wave})/\Gamma_{\text{total}}$				Γ_9/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.11$\pm$0.05	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	

$\Gamma(\Delta\bar{K}, D\text{-wave})/\Gamma_{\text{total}}$				Γ_{10}/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
0.01±0.01	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(N\bar{K}^*(892), S=1/2, S\text{-wave})/\Gamma_{\text{total}}$				Γ_{11}/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
0.27±0.07	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(N\bar{K}^*(892), S=1/2, D\text{-wave})/\Gamma_{\text{total}}$				Γ_{12}/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
0.13±0.06	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	
$\Gamma(N\bar{K}^*(892), S=3/2, D\text{-wave})/\Gamma_{\text{total}}$				Γ_{13}/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
0.13±0.06	SARANTSEV 19	DPWA	$\bar{K}N$ multichannel	

Σ(2010) REFERENCES

SARANTSEV 19	EPJ A55 180	A.V. Sarantsev <i>et al.</i>	(BONN, PNPI)
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