NODE=B060

$\Lambda(1890)\ 3/2^+$

$I(J^P) = 0(\frac{3}{2}^+)$ Status: ****

For results published before 1974 (they are now obsolete), see our 1982 edition Physics Letters **111B** 1 (1982).

NODE=B060

$\Lambda(1890)$ POLE POSITION

NODE=B060225

REAL PART

NODE=B060RE
NODE=B060RE

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
1872±5	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1859^{+5}_{-7}	[1] KAMANO	15	DPWA	Multichannel
1876	ZHANG	13A	DPWA	Multichannel

[1] From the preferred solution A in KAMANO 15, incompatible with solution B.

NODE=B060RE;LINKAGE=A

−2×IMAGINARY PART

NODE=B060IM
NODE=B060IM

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
101±10	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
113^{+20}_{-4}	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel
145	ZHANG	13A	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15, incompatible with solution B.

NODE=B060IM;LINKAGE=A

$\Lambda(1890)$ POLE RESIDUE

NODE=B060250

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

NODE=B060250

Normalized residue in $N\overline{K} \to \Lambda(1890) \to N\overline{K}$

NODE=B060RS1
NODE=B060RS1

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.30 ±0.06	**0 ± 10**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.241	−23	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060RS1;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(1890) \to \Sigma\pi$

NODE=B060A01
NODE=B060A01

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.14 ±0.05	**148 ± 12**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.101	104	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

OCCUR=2

[1] From the preferred solution A in KAMANO 15.

NODE=B060A01;LINKAGE=B

Normalized residue in $N\overline{K} \to \Lambda(1890) \to \Lambda\eta$

NODE=B060A05
NODE=B060A05

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.0485	−54	[1] KAMANO	15	DPWA	Multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060A05;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(1890) \to \Xi K$

NODE=B060A06
NODE=B060A06

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.065 ±0.020	**160 ± 30**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.0562	−85	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060A06;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(1890) \to \Sigma(1385)\pi$, P-wave

NODE=B060A07
NODE=B060A07

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.11 ±0.05	**−160 ± 45**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.295	−40	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060A07;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(1890) \to \Sigma(1385)\pi$, F-wave

NODE=B060A08
NODE=B060A08

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.10 ±0.04	**10 ± 50**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.064	127	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060A08;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(1890) \to N\overline{K}^*(892)$, S=1/2 , P-wave

NODE=B060A09
NODE=B060A09

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.03 ±0.03		SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.188	−160	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060A09;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(1890) \to N\overline{K}^*(892)$, S=3/2 , P-wave

NODE=B060A10
NODE=B060A10

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.05 ±0.03	**180 ± 40**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.209	15	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060A10;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(1890) \to N\overline{K}^*(892)$, S=3/2, F-wave

NODE=B060A11
NODE=B060A11

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.0141	129	[1] KAMANO	15	DPWA	Multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060A11;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(1890) \to \Lambda\omega$, S=1/2 , P-wave

NODE=B060A00
NODE=B060A00

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.24±0.06	**15 ± 20**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

Normalized residue in $N\overline{K} \to \Lambda(1890) \to \Lambda\omega$, S=3/2 , P-wave

NODE=B060A02
NODE=B060A02

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.15±0.08	**−165 ± 20**	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel

$\Lambda(1890)$ MASS

NODE=B060M

NODE=B060M

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
1870 to 1910 (≈ 1890) OUR ESTIMATE				→ UNCHECKED ←
1873± 5	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
1900± 5	ZHANG	13A	DPWA	$\overline{K}N$ multichannel
1897± 5	GOPAL	80	DPWA	$\overline{K}N \to \overline{K}N$
1908±10	ALSTON-...	78	DPWA	$\overline{K}N \to \overline{K}N$
1894±10	HEMINGWAY	75	DPWA	$K^-p \to \overline{K}N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1900± 5	GOPAL	77	DPWA	$\overline{K}N$ multichannel
1856 or 1868	[1] MARTIN	77	DPWA	$\overline{K}N$ multichannel
1900	[2] NAKKASYAN	75	DPWA	$K^-p \to \Lambda\omega$

[1] The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit.
[2] Found in one of two best solutions.

NODE=B060M;LINKAGE=B
NODE=B060M;LINKAGE=A

$\Lambda(1890)$ WIDTH

NODE=B060W

NODE=B060W

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
80 to 160 (≈ 120) OUR ESTIMATE				→ UNCHECKED ←
103±10	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
161±15	ZHANG	13A	DPWA	$\overline{K}N$ multichannel
74±10	GOPAL	80	DPWA	$\overline{K}N \to \overline{K}N$
119±20	ALSTON-...	78	DPWA	$\overline{K}N \to \overline{K}N$
107±10	HEMINGWAY	75	DPWA	$K^-p \to \overline{K}N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
72±10	GOPAL	77	DPWA	$\overline{K}N$ multichannel
191 or 193	[1] MARTIN	77	DPWA	$\overline{K}N$ multichannel
100	[2] NAKKASYAN	75	DPWA	$K^-p \to \Lambda\omega$

[1] The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit.
[2] Found in one of two best solutions.

NODE=B060W;LINKAGE=B
NODE=B060W;LINKAGE=A

$\Lambda(1890)$ DECAY MODES

NODE=B060215;NODE=B060

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$N\overline{K}$	0.24 to 0.36	DESIG=1
Γ_2	$\Sigma\pi$	3–10 %	DESIG=2;OUR EST
Γ_3	$\Lambda\eta$		DESIG=11
Γ_4	ΞK		DESIG=13
Γ_5	$\Sigma(1385)\pi$	seen	DESIG=8;OUR EST
Γ_6	$\Sigma(1385)\pi$, P-wave	(6.0 $\pm$3.0) %	DESIG=4
Γ_7	$\Sigma(1385)\pi$, F-wave	(4.0 $\pm$2.0) %	DESIG=5
Γ_8	$N\overline{K}^*(892)$	seen	DESIG=6;OUR EST
Γ_9	$N\overline{K}^*(892)$, S=1/2		DESIG=7
Γ_{10}	$N\overline{K}^*(892)$, S=1/2, P-wave		DESIG=14
Γ_{11}	$N\overline{K}^*(892)$, S=3/2, P-wave		DESIG=15
Γ_{12}	$N\overline{K}^*(892)$, S=3/2, F-wave		DESIG=9
Γ_{13}	$\Lambda\omega$		DESIG=3

$\Lambda(1890)$ BRANCHING RATIOS

NODE=B060220

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

NODE=B060220

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

NODE=B060R1
NODE=B060R1

VALUE	DOCUMENT ID		TECN	COMMENT
0.24 to 0.36 OUR ESTIMATE				→ UNCHECKED ←
0.30 $\pm$0.06	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
0.37 $\pm$0.03	ZHANG	13A	DPWA	$\overline{K}N$ multichannel
0.20 $\pm$0.02	GOPAL	80	DPWA	$\overline{K}N \to \overline{K}N$
0.34 $\pm$0.05	ALSTON-...	78	DPWA	$\overline{K}N \to \overline{K}N$
0.24 $\pm$0.04	HEMINGWAY	75	DPWA	$K^-p \to \overline{K}N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.305	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel
0.18 $\pm$0.02	GOPAL	77	DPWA	See GOPAL 80
0.36 or 0.34	[2] MARTIN	77	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R1;LINKAGE=A

[2] The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit.

NODE=B060;LINKAGE=B

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

NODE=B060R2
NODE=B060R2

VALUE	DOCUMENT ID		TECN	COMMENT
6 $\pm$2	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
<0.03	LANGBEIN	72	IPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.04	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R2;LINKAGE=A

$\Gamma(\Lambda\eta)/\Gamma_{\text{total}}$ Γ_3/Γ

NODE=B060R00
NODE=B060R00

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.012	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R00;LINKAGE=A

$\Gamma(\Xi K)/\Gamma_{\text{total}}$ Γ_4/Γ

NODE=B060R02
NODE=B060R02

VALUE	DOCUMENT ID		TECN	COMMENT
$\sim$ 0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.009	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R02;LINKAGE=A

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

NODE=B060R03
NODE=B060R03

VALUE	DOCUMENT ID		TECN	COMMENT
0.06 $\pm$0.03	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.453	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R03;LINKAGE=A

$\Gamma(\Sigma(1385)\pi, F\text{-wave})/\Gamma_{total}$ Γ_7/Γ

NODE=B060R04
NODE=B060R04

VALUE	DOCUMENT ID		TECN	COMMENT
0.04 ±0.02	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.019	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R04;LINKAGE=A

$\Gamma(N\overline{K}^*(892), S=1/2, P\text{-wave})/\Gamma_{total}$ Γ_{10}/Γ

NODE=B060R05
NODE=B060R05

VALUE	DOCUMENT ID		TECN	COMMENT
<0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.073	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R05;LINKAGE=A

$\Gamma(N\overline{K}^*(892), S=3/2, P\text{-wave})/\Gamma_{total}$ Γ_{11}/Γ

NODE=B060R06
NODE=B060R06

VALUE	DOCUMENT ID		TECN	COMMENT
∼ 0.01	SARANTSEV	19	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.088	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R06;LINKAGE=A

$\Gamma(N\overline{K}^*(892), S=3/2, F\text{-wave})/\Gamma_{total}$ Γ_{12}/Γ

NODE=B060R07
NODE=B060R07

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.001	[1] KAMANO	15	DPWA	$\overline{K}N$ multichannel

[1] From the preferred solution A in KAMANO 15.

NODE=B060R07;LINKAGE=A

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(1890) \to \Sigma\pi$ $(\Gamma_1\Gamma_2)^{1/2}/\Gamma$

NODE=B060R3
NODE=B060R3

VALUE	DOCUMENT ID		TECN	COMMENT
−0.09±0.02	ZHANG	13A	DPWA	$\overline{K}N$ multichannel
−0.09±0.03	GOPAL	77	DPWA	$\overline{K}N$ multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
+0.15 or +0.14	[1] MARTIN	77	DPWA	$\overline{K}N$ multichannel

[1] The two MARTIN 77 values are from a T-matrix pole and from a Breit-Wigner fit.

NODE=B060R3;LINKAGE=B

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(1890) \to \Sigma(1385)\pi$, P-wave $(\Gamma_1\Gamma_6)^{1/2}/\Gamma$

NODE=B060R5
NODE=B060R5

VALUE	DOCUMENT ID		TECN	COMMENT
<0.03	CAMERON	78	DPWA	$K^-p \to \Sigma(1385)\pi$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(1890) \to \Sigma(1385)\pi$, F-wave $(\Gamma_1\Gamma_7)^{1/2}/\Gamma$

NODE=B060R6
NODE=B060R6

VALUE	DOCUMENT ID		TECN	COMMENT
−0.31 ±0.04	ZHANG	13A	DPWA	$\overline{K}N$ multichannel
−0.126±0.055	[1] CAMERON	78	DPWA	$K^-p \to \Sigma(1385)\pi$

[1] The published sign has been changed to be in accord with the baryon-first convention.

NODE=B060;LINKAGE=D

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(1890) \to N\overline{K}^*(892)$, $S=1/2$ $(\Gamma_1\Gamma_9)^{1/2}/\Gamma$

NODE=B060R7
NODE=B060R7

VALUE	DOCUMENT ID		TECN	COMMENT
−0.17±0.05	ZHANG	13A	DPWA	$\overline{K}N$ multichannel
−0.07±0.03	[1,2] CAMERON	78B	DPWA	$K^-p \to N\overline{K}^*$

[1] Upper limits on the P_3 and F_3 waves are each 0.03.

NODE=B060;LINKAGE=E

[2] The published sign has been changed to be in accord with the baryon-first convention.

NODE=B060R7;LINKAGE=D

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(1890) \to N\overline{K}^*(892)$, $S=3/2$, F-wave $(\Gamma_1\Gamma_{12})^{1/2}/\Gamma$

NODE=B060R01
NODE=B060R01

VALUE	DOCUMENT ID		TECN	COMMENT
−0.11±0.03	ZHANG	13A	DPWA	$\overline{K}N$ multichannel

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(1890) \to \Lambda\omega$ $(\Gamma_1\Gamma_{13})^{1/2}/\Gamma$

NODE=B060R4
NODE=B060R4

VALUE	DOCUMENT ID		TECN	COMMENT
seen	BACCARI	77	IPWA	$K^-p \to \Lambda\omega$
0.032	[1] NAKKASYAN	75	DPWA	$K^-p \to \Lambda\omega$

[1] Found in one of two best solutions.

NODE=B060;LINKAGE=A

Λ(1890) REFERENCES

NODE=B060

SARANTSEV	19	EPJ A55 180	A.V. Sarantsev *et al.*	(BONN, PNPI)		REFID=59986
KAMANO	15	PR C92 025205	H. Kamano *et al.*	(ANL, OSAK)		REFID=57507
ZHANG	13A	PR C88 035205	H. Zhang *et al.*	(KSU)		REFID=55441
PDG	82	PL 111B 1	M. Roos *et al.*	(HELS, CIT, CERN)		REFID=41167
GOPAL	80	Toronto Conf. 159	G.P. Gopal	(RHEL)	IJP	REFID=31755
ALSTON-...	78	PR D18 182	M. Alston-Garnjost *et al.*	(LBL, MTHO+)	IJP	REFID=31751
Also		PRL 38 1007	M. Alston-Garnjost *et al.*	(LBL, MTHO+)	IJP	REFID=31752
CAMERON	78	NP B143 189	W. Cameron *et al.*	(RHEL, LOIC)	IJP	REFID=31837
CAMERON	78B	NP B146 327	W. Cameron *et al.*	(RHEL, LOIC)	IJP	REFID=31838
BACCARI	77	NC 41A 96	B. Baccari *et al.*	(SACL, CDEF)	IJP	REFID=31932
GOPAL	77	NP B119 362	G.P. Gopal *et al.*	(LOIC, RHEL)	IJP	REFID=31750
MARTIN	77	NP B127 349	B.R. Martin, M.K. Pidcock, R.G. Moorhouse	(LOUC+)	IJP	REFID=31762
Also		NP B126 266	B.R. Martin, M.K. Pidcock	(LOUC)		REFID=31763
Also		NP B126 285	B.R. Martin, M.K. Pidcock	(LOUC)	IJP	REFID=31764
HEMINGWAY	75	NP B91 12	R.J. Hemingway *et al.*	(CERN, HEIDH, MPIM)	IJP	REFID=31930
NAKKASYAN	75	NP B93 85	A. Nakkasyan	(CERN)	IJP	REFID=31931
LANGBEIN	72	NP B47 477	W. Langbein, F. Wagner	(MPIM)	IJP	REFID=31758