NODE=B027

$\Lambda(2085)\ 7/2^+$

$I(J^P) = 0(\frac{7}{2}^+)$ Status: **

OMITTED FROM SUMMARY TABLE
was $\Lambda(2020)$

In LITCHFIELD 71, need for the state rests solely on a possibly inconsistent polarization measurement at 1.784 GeV/c. HEMINGWAY 75 does not require this state. GOPAL 77 does not need it in either $N\overline{K}$ or $\Sigma\pi$. With new K^-n angular distributions included, DECLAIS 77 sees it. However, this and other new data are included in GOPAL 80 and the state is not required. BACCARI 77 weakly supports it.

NODE=B027

$\Lambda(2085)$ POLE POSITION

NODE=B027225

REAL PART

NODE=B027RE

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
1757	[1] KAMANO 15	DPWA	Multichannel

NODE=B027RE

[1] From the preferred solution A in KAMANO 15. Solution B reports M = 2041^{+80}_{-82} MeV.

NODE=B027RE;LINKAGE=A

$-2\times$IMAGINARY PART

NODE=B027IM

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
146	[1] KAMANO 15	DPWA	Multichannel

NODE=B027IM

[1] From the preferred solution A in KAMANO 15. Solution B reports M = 238^{+114}_{-34} MeV.

NODE=B027IM;LINKAGE=A

$\Lambda(2085)$ POLE RESIDUES

NODE=B027250

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

NODE=B027250

Normalized residue in $N\overline{K} \to \Lambda(2085) \to N\overline{K}$

NODE=B027A00

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.000145	−77	[1] KAMANO 15	DPWA	Multichannel

NODE=B027A00

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

NODE=B027A00;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(2085) \to \Sigma\pi$

NODE=B027A01

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0112	120	[1] KAMANO 15	DPWA	Multichannel

NODE=B027A01

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

NODE=B027A01;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(2085) \to \Lambda\eta$

NODE=B027A02

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.000786	−100	[1] KAMANO 15	DPWA	Multichannel

NODE=B027A02

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

NODE=B027A02;LINKAGE=A

Normalized residue in $N\overline{K} \to \Lambda(2085) \to \Sigma(1385)\pi$, F-wave

NODE=B027A03

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.00451	−82	[1] KAMANO 15	DPWA	Multichannel

NODE=B027A03

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

NODE=B027A03;LINKAGE=A

Normalized residue in $N\overline{K} \rightarrow \Lambda(2085) \rightarrow \Sigma(1385)\pi$, H-wave

NODE=B027A04
NODE=B027A04

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.0000298	−128	[1] KAMANO	15	DPWA	Multichannel

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

NODE=B027A04;LINKAGE=A

$\Lambda(2085)$ MASS

NODE=B027M

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
≈ 2020 OUR ESTIMATE				→ UNCHECKED ←
2043±22	ZHANG	13A	DPWA	Multichannel
2140	BACCARI	77	DPWA	$K^- p \rightarrow \Lambda\omega$
2117	DECLAIS	77	DPWA	$\overline{K}N \rightarrow \overline{K}N$
2100±30	LITCHFIELD	71	DPWA	$K^- p \rightarrow \overline{K}N$
2020±20	BARBARO-...	70	DPWA	$K^- p \rightarrow \Sigma\pi$

NODE=B027M
NODE=B027M

$\Lambda(2085)$ WIDTH

NODE=B027W

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
200±75	ZHANG	13A	DPWA	Multichannel
128	BACCARI	77	DPWA	$K^- p \rightarrow \Lambda\omega$
167	DECLAIS	77	DPWA	$\overline{K}N \rightarrow \overline{K}N$
120±30	LITCHFIELD	71	DPWA	$K^- p \rightarrow \overline{K}N$
160±30	BARBARO-...	70	DPWA	$K^- p \rightarrow \Sigma\pi$

NODE=B027W

$\Lambda(2085)$ DECAY MODES

NODE=B027215;NODE=B027

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$N\overline{K}$		DESIG=1
Γ_2	$\Sigma\pi$		DESIG=2
Γ_3	$\Lambda\eta$		DESIG=5
Γ_4	$\Sigma(1385)\pi$, F-wave		DESIG=6
Γ_5	$\Sigma(1385)\pi$, H-wave		DESIG=7
Γ_6	$N\overline{K}^*(892)$, S=1/2	(30±9) %	DESIG=4
Γ_7	$N\overline{K}^*(892)$, S=1/2, F-wave		DESIG=8
Γ_8	$N\overline{K}^*(892)$, S=3/2, F-wave		DESIG=9
Γ_9	$N\overline{K}^*(892)$, S=3/2, H-wave		DESIG=10
Γ_{10}	$\Lambda\omega$		DESIG=3

$\Lambda(2085)$ BRANCHING RATIOS

NODE=B027220

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

NODE=B027220

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

NODE=B027R1
NODE=B027R1

VALUE	DOCUMENT ID		TECN	COMMENT
0.028±0.005	ZHANG	13A	DPWA	Multichannel
0.05	DECLAIS	77	DPWA	$\overline{K}N \rightarrow \overline{K}N$
0.05 ±0.02	LITCHFIELD	71	DPWA	$K^- p \rightarrow \overline{K}N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	[1] KAMANO	15	DPWA	Multichannel

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

NODE=B027R1;LINKAGE=A

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

NODE=B027R00
NODE=B027R00

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.891	[1] KAMANO	15	DPWA	Multichannel

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

NODE=B027R00;LINKAGE=A

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

NODE=B027R02
NODE=B027R02

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.002	[1] KAMANO	15	DPWA	Multichannel

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

NODE=B027R02;LINKAGE=A

$\Gamma(\Sigma(1385)\pi$, F-wave$)/\Gamma_{total}$ — Γ_4/Γ

NODE=B027R03
NODE=B027R03

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.105	[1] KAMANO 15	DPWA	Multichannel

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

NODE=B027R03;LINKAGE=A

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

NODE=B027R04
NODE=B027R04

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
not seen	[1] KAMANO 15	DPWA	Multichannel

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

NODE=B027R04;LINKAGE=A

$\Gamma(N\overline{K}^*(892)$, S=1/2, F-wave$)/\Gamma_{total}$ — Γ_7/Γ

NODE=B027R05
NODE=B027R05

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
not seen	[1] KAMANO 15	DPWA	Multichannel

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

NODE=B027R05;LINKAGE=A

$\Gamma(N\overline{K}^*(892)$, S=3/2, F-wave$)/\Gamma_{total}$ — Γ_8/Γ

NODE=B027R06
NODE=B027R06

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.001	[1] KAMANO 15	DPWA	Multichannel

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

NODE=B027R06;LINKAGE=A

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

NODE=B027R07
NODE=B027R07

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
not seen	[1] KAMANO 15	DPWA	Multichannel

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

NODE=B027R07;LINKAGE=A

$\Gamma(N\overline{K}^*(892)$, S=1/2$)/\Gamma_{total}$ — Γ_6/Γ

NODE=B027R01
NODE=B027R01

VALUE	DOCUMENT ID	TECN	COMMENT
0.30±0.09	ZHANG 13A	DPWA	Multichannel

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(2085) \to \Sigma\pi$ — $(\Gamma_1\Gamma_2)^{1/2}/\Gamma$

NODE=B027R2
NODE=B027R2

VALUE	DOCUMENT ID	TECN	COMMENT
+0.02±0.01	ZHANG 13A	DPWA	Multichannel
−0.15±0.02	BARBARO-... 70	DPWA	$K^- p \to \Sigma\pi$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \to \Lambda(2085) \to \Lambda\omega$ — $(\Gamma_1\Gamma_{10})^{1/2}/\Gamma$

NODE=B027R3
NODE=B027R3

VALUE	DOCUMENT ID	TECN	COMMENT
<0.05	BACCARI 77	DPWA	$K^- p \to \Lambda\omega$

$\Lambda(2085)$ REFERENCES

NODE=B027

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
GOPAL	80	Toronto Conf. 159	G.P. Gopal	(RHEL)	REFID=31755
BACCARI	77	NC 41A 96	B. Baccari *et al.*	(SACL, CDEF) IJP	REFID=31932
DECLAIS	77	CERN 77-16	Y. Declais *et al.*	(CAEN, CERN) IJP	REFID=31885
GOPAL	77	NP B119 362	G.P. Gopal *et al.*	(LOIC, RHEL)	REFID=31750
HEMINGWAY	75	NP B91 12	R.J. Hemingway *et al.*	(CERN, HEIDH, MPIM) IJP	REFID=31930
LITCHFIELD	71	NP B30 125	P.J. Litchfield *et al.*	(RHEL, CDEF, SACL) IJP	REFID=31947
BARBARO-...	70	Duke Conf. 173 Hyperon Resonances, 1970	A. Barbaro-Galtieri	(LRL) IJP	REFID=31777