$\Lambda(2350)$ H_{09}

$I(J^P) = 0(\frac{9}{2}^+)$ Status: ***

DAUM 68 favors $J^P = 7/2^-$ or $9/2^+$. BRICMAN 70 favors $9/2^+$. LASINSKI 71 suggests three states in this region using a Pomeron + resonances model. There are now also three formation experiments from the College de France-Saclay group, DEBELLEFON 77, BACCARI 77, and DEBELLEFON 78, which find $9/2^+$ in energy-dependent partial-wave analyses of $\overline{K}N \rightarrow \Sigma\pi$, $\Lambda\omega$, and $N\overline{K}$.

$\Lambda(2350)$ MASS

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
2340 to 2370 (≈ 2350) OUR ESTIMATE				
2370±50	DEBELLEFON	78	DPWA	$\overline{K}N \rightarrow \overline{K}N$
2365±20	DEBELLEFON	77	DPWA	$K^-p \rightarrow \Sigma\pi$
2358± 6	BRICMAN	70	CNTR	Total, charge exchange
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2372	BACCARI	77	DPWA	$K^-p \rightarrow \Lambda\omega$
2344±15	COOL	70	CNTR	K^-p, K^-d total
2360±20	LU	70	CNTR	$\gamma p \rightarrow K^+Y^*$
2340± 7	BUGG	68	CNTR	K^-p, K^-d total

$\Lambda(2350)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
100 to 250 (≈ 150) OUR ESTIMATE				
204±50	DEBELLEFON	78	DPWA	$\overline{K}N \rightarrow \overline{K}N$
110±20	DEBELLEFON	77	DPWA	$K^-p \rightarrow \Sigma\pi$
324±30	BRICMAN	70	CNTR	Total, charge exchange
• • • We do not use the following data for averages, fits, limits, etc. • • •				
257	BACCARI	77	DPWA	$K^-p \rightarrow \Lambda\omega$
190	COOL	70	CNTR	K^-p, K^-d total
55	LU	70	CNTR	$\gamma p \rightarrow K^+Y^*$
140±20	BUGG	68	CNTR	K^-p, K^-d total

$\Lambda(2350)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$N\overline{K}$	~ 12 %
Γ_2	$\Sigma\pi$	~ 10 %
Γ_3	$\Lambda\omega$	

The above branching fractions are our estimates, not fits or averages.

$\Lambda(2350)$ BRANCHING RATIOS

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

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

VALUE	DOCUMENT ID		TECN	COMMENT
$\sim$ 0.12 OUR ESTIMATE				
0.12$\pm$0.04	DEBELLEFON	78	DPWA	$\overline{K}N \rightarrow \overline{K}N$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \rightarrow \Lambda(2350) \rightarrow \Sigma\pi$ — $(\Gamma_1\Gamma_2)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
$-$0.11$\pm$0.02	DEBELLEFON	77	DPWA	$K^- p \rightarrow \Sigma\pi$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\overline{K} \rightarrow \Lambda(2350) \rightarrow \Lambda\omega$ — $(\Gamma_1\Gamma_3)^{1/2}/\Gamma$

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

$\Lambda(2350)$ REFERENCES

DEBELLEFON	78	NC 42A 403	A. de Bellefon et al.	(CDEF, SACL) IJP
BACCARI	77	NC 41A 96	B. Baccari et al.	(SACL, CDEF) IJP
DEBELLEFON	77	NC 37A 175	A. de Bellefon et al.	(CDEF, SACL) IJP
LASINSKI	71	NP B29 125	T.A. Lasinski	(EFI) IJP
BRICMAN	70	PL 31B 152	C. Bricman et al.	(CERN, CAEN, SACL)
COOL	70	PR D1 1887	R.L. Cool et al.	(BNL) I
Also		PRL 16 1228	R.L. Cool et al.	(BNL) I
LU	70	PR D2 1846	D.C. Lu et al.	(YALE)
BUGG	68	PR 168 1466	D.V. Bugg et al.	(RHEL, BIRM, CAVE) I
DAUM	68	NP B7 19	C. Daum et al.	(CERN) JP