$\Lambda(2350)$ 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.

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

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

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

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

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ 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	De Bellefon, Berthon, Billoir+	(CDEF, SACL) IJP
BACCARI	77	NC 41A 96	+Poulard, Revel, Tallini+	(SACL, CDEF) IJP
DEBELLEFON	77	NC 37A 175	De Bellefon, Berthon, Billoir+	(CDEF, SACL) IJP
LASINSKI	71	NP B29 125		(EFI) IJP
BRICMAN	70	PL 31B 152	+Ferro-Luzzi, Perreau+	(CERN, CAEN, SACL)
COOL	70	PR D1 1887	+Giacomelli, Kycia, Leontic, Li+	(BNL) I
Also	66	PRL 16 1228	Cool, Giacomelli, Kycia, Leontic, Lundby+	(BNL) I
LU	70	PR D2 1846	+Greenberg, Hughes, Minehart, Mori+	(YALE)
BUGG	68	PR 168 1466	+Gilmore, Knight+	(RHEL, BIRM, CAVE) I
DAUM	68	NP B7 19	+Erne, Lagnaux, Sens, Steuer, Udo	(CERN) JP