

$\Lambda_c(2940)^+$

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

A narrow peak seen in pD^0 and in $\Lambda_c^+ \pi^+ \pi^-$. It is not seen in pD^+ , and therefore it is a Λ_c^+ and not a Σ_c . $J^P = 3/2^-$ is favored, but not certain.

$\Lambda_c(2940)^+$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2939.6^{+1.3}_{-1.5} OUR AVERAGE				
2944.8 ^{+3.5} _{-2.5} ± 0.4 ^{+0.1} _{-4.6}		¹ AAIJ	17S	LHCB in $\Lambda_b^0 \rightarrow D^0 p \pi^-$
2939.8 ± 1.3 ± 1.0	2.2k	AUBERT	07	BABR in pD^0
2938.0 ± 1.3 ^{+2.0} _{-4.0}	220	MIZUK	07	BELL in $\Sigma_c(2455)^{0,++} \pi^\pm$

¹ The third AAIJ 17S uncertainty comes from modeling the resonant shape of the nearby $\Lambda_c(2880)^+$ and the background (non-resonant) amplitudes.

$\Lambda_c(2940)^+$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
20⁺⁶₋₅ OUR AVERAGE				
27.7 ^{+8.2} _{-6.0} ± 0.9 ^{+5.2} _{-10.4}		² AAIJ	17S	LHCB in $\Lambda_b^0 \rightarrow D^0 p \pi^-$
17.5 ± 5.2 ± 5.9	2.2k	AUBERT	07	BABR in pD^0
13 ⁺⁸ ₋₅ ⁺²⁷ ₋₇	220	MIZUK	07	BELL in $\Sigma_c(2455)^{0,++} \pi^\pm$

² The third AAIJ 17S uncertainty comes from modeling the resonant shape of the nearby $\Lambda_c(2880)^+$ and the background (non-resonant) amplitudes.

$\Lambda_c(2940)^+$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $\Lambda_c \eta$	
Γ_2 pD^0	seen
Γ_3 $\Sigma_c(2455)^{0,++} \pi^\pm$	seen

$\Lambda_c(2940)^+$ BRANCHING RATIOS

$\Gamma(pD^0)/\Gamma_{\text{total}}$		Γ_2/Γ		
$\Gamma(\Lambda_c \eta)/\Gamma(\Sigma_c(2455)^{0,++} \pi^\pm)$		Γ_1/Γ_3		
VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.11	90	LI	24C	BELL $e^+ e^-$ at $\sim \Upsilon(\text{nS})$

$\Gamma(pD^0)/\Gamma(\Sigma_c(2455)^{0,++}\pi^\pm)$					Γ_2/Γ_3
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
$3.59\pm0.21\pm0.56$	16k	LI	24C BELL	e^+e^- at $\sim \gamma(nS)$	

$\Lambda_c(2940)^+$ REFERENCES

LI	24C	PR D110 032021	S.X. Li <i>et al.</i>	(BELLE Collab.)
AAIJ	17S	JHEP 1705 030	R. Aaij <i>et al.</i>	(LHCb Collab.) JP
AUBERT	07	PRL 98 012001	B. Aubert <i>et al.</i>	(BABAR Collab.)
MIZUK	07	PRL 98 262001	R. Mizuk <i>et al.</i>	(BELLE Collab.)