$\Lambda_c(2880)^+$

$I(J^P) = 0(\frac{5}{2}^+)$ Status: ***

A narrow peak seen in $\Lambda_c^+\pi^+\pi^-$ and in pD^0. It is not seen in pD^+, and therefore it is a Λ_c^+ and not a Σ_c.

$\Lambda_c(2880)^+$ MASS

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2881.63±0.24 OUR FIT					
2881.62±0.24 OUR AVERAGE					
$2881.75\pm0.29\pm0.07^{+0.14}_{-0.20}$		[1] AAIJ	17S	LHCB	in $\Lambda_b^0 \to D^0 p\pi^-$
2881.9 ±0.1 ±0.5	2.8k	AUBERT	07	BABR	in pD^0
2881.2 ±0.2 ±0.4	690	MIZUK	07	BELL	in $\Sigma_c(2455)^{0,++}\,\pi^\pm$

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

$\Lambda_c(2880)^+ - \Lambda_c^+$ MASS DIFFERENCE

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
595.17±0.28 OUR FIT					
596 ±1 ±2	350	ARTUSO	01	CLE2	in $\Lambda_c^+\pi^+\pi^-$

$\Lambda_c(2880)^+$ WIDTH

VALUE (MeV)	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
5.6 $^{+0.8}_{-0.6}$ OUR AVERAGE						
$5.43^{+0.77}_{-0.71}{}^{+0.81}_{-0.29}$			[2] AAIJ	17S	LHCB	in $\Lambda_b^0 \to D^0 p\pi^-$
5.8 ±1.5 ±1.1		2.8k	AUBERT	07	BABR	in pD^0
5.8 ±0.7 ±1.1		690	MIZUK	07	BELL	in $\Sigma_c(2455)^{0,++}\,\pi^\pm$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<8	90		ARTUSO	01	CLEO	in $\Lambda_c^+\pi^+\pi^-$

[2] AAIJ 17S reports $5.43^{+0.77}_{-0.71}\pm0.29^{+0.75}_{-0.00}$ MeV value where the third uncertainty comes from modeling the resonant shape of the $\Lambda_c(2880)^+$ and the background (non-resonant) amplitudes. We have combined in quadrature the systematic uncertainties.

$\Lambda_c(2880)^+$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\Lambda_c^+\pi^+\pi^-$	seen
Γ_2	$\Sigma_c(2455)^{0,++}\pi^\pm$	seen
Γ_3	$\Sigma_c(2520)^{0,++}\pi^\pm$	seen
Γ_4	$\Lambda_c^+\eta$	
Γ_5	pD^0	seen

$\Lambda_c(2880)^+$ BRANCHING RATIOS

$\Gamma(\Sigma_c(2455)^{0,++}\pi^\pm)/\Gamma(\Lambda_c^+\pi^+\pi^-)$ Γ_2/Γ_1

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.392±0.031 OUR AVERAGE	Error includes scale factor of 1.3.				
0.404±0.021±0.014		MIZUK	07	BELL	in $\Sigma_c(2455)^{0,++}\pi^\pm$
0.31 ±0.06 ±0.03	96	ARTUSO	01	CLE2	$e^+e^-\approx\Upsilon(4S)$

$\Gamma(\Sigma_c(2520)^{0,++}\pi^\pm)/\Gamma(\Lambda_c^+\pi^+\pi^-)$ Γ_3/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.091±0.025±0.010		MIZUK	07	BELL	in $\Sigma_c(2455)^{0,++}\pi^\pm$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.11	90	ARTUSO	01	CLE2	$e^+e^-\approx\Upsilon(4S)$

$\Gamma(\Sigma_c(2520)^{0,++}\pi^\pm)/\Gamma(\Sigma_c(2455)^{0,++}\pi^\pm)$ Γ_3/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.225±0.062±0.025	[3] MIZUK	07	BELL	in $\Sigma_c(2455)^{0,++}\pi^\pm$

[3] This MIZUK 07 ratio is redundant with MIZUK 07 ratios given above.

$\Gamma(\Lambda_c^+\eta)/\Gamma(\Sigma_c(2455)^{0,++}\pi^\pm)$ Γ_4/Γ_2

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.13	90	LI	24C	BELL	e^+e^- at $\sim\Upsilon$(nS)

$\Gamma(pD^0)/\Gamma(\Sigma_c(2455)^{0,++}\pi^\pm)$ Γ_5/Γ_2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.75±0.03±0.07	12k	LI	24C	BELL	e^+e^- at $\sim\Upsilon$(nS)

$\Lambda_c(2880)^+$ REFERENCES

LI	24C	PR D110 032021	S.X. Li *et al.*	(BELLE Collab.)
AAIJ	17S	JHEP 1705 030	R. Aaij *et al.*	(LHCb Collab.) JP
AUBERT	07	PRL 98 012001	B. Aubert *et al.*	(BABAR Collab.)
MIZUK	07	PRL 98 262001	R. Mizuk *et al.*	(BELLE Collab.)
ARTUSO	01	PRL 86 4479	M. Artuso *et al.*	(CLEO Collab.)