NODE=S068

Ξ_{cc}^{++}

$I(J^P) = ?(?^?)$ Status: ***

Ξ_{cc}^{++} MASS

NODE=S068M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
3621.6 ±0.4 OUR AVERAGE	[3621.2 ± 0.7 MeV OUR 2020 AVERAGE]				
3621.55±0.23±0.30	2k	[1] AAIJ	20J	LHCB	pp at 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3620.6 ±1.5 ±0.4 ±0.3	91	[2] AAIJ	18BA	LHCB	pp at 13 TeV
3621.40±0.72±0.27±0.14	313	[3] AAIJ	17BC	LHCB	pp at 13 TeV

NODE=S068M

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NEW

[1] AAIJ 20J combines mass measurements 3621.53 ± 0.24 ± 0.29 MeV from $\Xi_{cc}^{++} \to \Lambda_c^+ K^- \pi^+ \pi^+$ and 3621.95 ± 0.60 ± 0.49 MeV from $\Xi_{cc}^{++} \to \Xi_c^+ \pi^+$. Supersedes AAIJ 18BA and AAIJ 17BC.

NODE=S068M;LINKAGE=C

[2] The third error in AAIJ 18BA value is from the uncertainty of the Ξ_c^+ mass.

NODE=S068M;LINKAGE=B

[3] The third error in AAIJ 17BC value is from the uncertainty of the Λ_c^+ mass. The width of the signal is 6.6 ± 0.8 MeV, consistent with the experimental resolution.

NODE=S068M;LINKAGE=A

Ξ_{cc}^{++} MEAN LIFE

NODE=S068T

VALUE (10^{-15} s)	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{256^{+24}_{-22}\pm14}$	304	AAIJ	18G	LHCB	pp at 13 TeV

NODE=S068T

Ξ_{cc}^{++} DECAY MODES

NODE=S068215;NODE=S068

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$\Lambda_c^+ K^- \pi^+ \pi^+$	seen	DESIG=1
Γ_2	$\Xi_c^+ \pi^+$, $\Xi_c^+ \to p K^- \pi^+$	seen	DESIG=2
Γ_3	$D^+ p K^- \pi^+$		DESIG=3

$\Gamma(\Lambda_c^+ K^- \pi^+ \pi^+)/\Gamma_{total}$ — Γ_1/Γ

NODE=S068R01

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AAIJ	17BC	LHCB	12 std significance

NODE=S068R01

$\Gamma(\Xi_c^+ \pi^+, \Xi_c^+ \to p K^- \pi^+)/\Gamma_{total}$ — Γ_2/Γ

NODE=S068R00

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	91	AAIJ	18BA	LHCB	5.9 std significance

NODE=S068R00

$\Gamma(\Xi_c^+ \pi^+, \Xi_c^+ \to p K^- \pi^+)/\Gamma(\Lambda_c^+ K^- \pi^+ \pi^+)$ — Γ_2/Γ_1

NODE=S068R02

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.2±0.6±0.1	[4] AAIJ	18BA	LHCB	Ratio 91 over 289 events

NODE=S068R02

[4] AAIJ 18BA reports $[\Gamma(\Xi_{cc}^{++} \to \Xi_c^+ \pi^+, \Xi_c^+ \to p K^- \pi^+)/\Gamma(\Xi_{cc}^{++} \to \Lambda_c^+ K^- \pi^+ \pi^+)] / [B(\Lambda_c^+ \to p K^- \pi^+)] = (3.5 \pm 0.9 \pm 0.3) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \to p K^- \pi^+) = (6.28 \pm 0.32) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S068R02;LINKAGE=A

$\Gamma(D^+ p K^- \pi^+)/\Gamma(\Lambda_c^+ K^- \pi^+ \pi^+)$ — Γ_3/Γ_1

NODE=S068R03

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<1.7 \times 10^{-2}}$	90	AAIJ	19AO	LHCB	pp at 13 TeV

NODE=S068R03

Ξ_{cc}^{++} REFERENCES

NODE=S068

AAIJ	20J	JHEP 2002 049	R. Aaij *et al.*	(LHCb Collab.)	REFID=60467
AAIJ	19AO	JHEP 1910 124	R. Aaij *et al.*	(LHCb Collab.)	REFID=60084
AAIJ	18BA	PRL 121 162002	R. Aaij *et al.*	(LHCb Collab.)	REFID=59526
AAIJ	18G	PRL 121 052002	R. Aaij *et al.*	(LHCb Collab.)	REFID=58857
AAIJ	17BC	PRL 119 112001	R. Aaij *et al.*	(LHCb Collab.)	REFID=58203