NODE=S068

Ξ_{cc}^{++}

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

Ξ_{cc}^{++} MASS

NODE=S068M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
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

[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
256^{+24}_{-22}±14	304	AAIJ	18G	LHCB	pp at 13 TeV

NODE=S068T

Ξ_{cc}^{++} DECAY MODES

NODE=S068215;NODE=S068

	Mode	Fraction (Γ_i/Γ)	Confidence level	
Γ_1	$\Lambda_c^+ K^- \pi^+ \pi^+$	**DEFINED AS 1**		DESIG=1
Γ_2	$\Xi_c^+ \pi^+$, $\Xi_c^+ \to p K^- \pi^+$	0.0022±0.0006		DESIG=2
Γ_3	$\Xi_c'^+ \pi^+$, $\Xi_c'^+ \to \Xi_c^+ \gamma$, $\Xi_c^+ \to p K^- \pi^+$	0.0031±0.0009		DESIG=4
Γ_4	$D^+ p K^- \pi^+$	<0.017	90%	DESIG=3

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

NODE=S068R01

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
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
• • • We do not use the following data for averages, fits, limits, etc. • • •					
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	[1] AAIJ	18BA	LHCB	Ratio 91 over 289 events

NODE=S068R02

[1] 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 $B(\Lambda_c^+ \to p K^- \pi^+) = (6.24 \pm 0.28) \times 10^{-2}$. 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

$\Gamma(\Xi_c'^+ \pi^+, \Xi_c'^+ \to \Xi_c^+ \gamma, \Xi_c^+ \to p K^- \pi^+)/\Gamma(\Xi_c^+ \pi^+, \Xi_c^+ \to p K^- \pi^+)$ — Γ_3/Γ_2

NODE=S068R04

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.41±0.17±0.10	756	[1] AAIJ	22G	LHCB	pp at 13 TeV

NODE=S068R04

[1] The photon in the $\Xi_c'^+ \to \Xi_c^+ \gamma$ process is not reconstructed. Analysis uses two disjoint subsamples triggered on and independently from the signal.

NODE=S068R04;LINKAGE=A

$\Gamma(D^+ p K^- \pi^+)/\Gamma(\Lambda_c^+ K^- \pi^+ \pi^+)$ Γ_4/Γ_1

NODE=S068R03
NODE=S068R03

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

Ξ_{cc}^{++} REFERENCES

NODE=S068

AAIJ	22G	JHEP 2205 038	R. Aaij *et al.*	(LHCb Collab.)	REFID=61662
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