



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

Ξ_{cc}⁺⁺ MASS

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
¹ AAIJ 20J combines mass measurements 3621.53 ± 0.24 ± 0.29 MeV from Ξ _{cc} ⁺⁺ → Λ _c ⁺ K ⁻ π ⁺ π ⁺ and 3621.95 ± 0.60 ± 0.49 MeV from Ξ _{cc} ⁺⁺ → Ξ _c ⁺ π ⁺ . Supersedes AAIJ 18BA and AAIJ 17BC.				
² The third error in AAIJ 18BA value is from the uncertainty of the Ξ _c ⁺ mass.				
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.				

Ξ_{cc}⁺⁺ MEAN LIFE

VALUE (10 ⁻¹⁵ s)	EVTS	DOCUMENT ID	TECN	COMMENT
256⁺²⁴₋₂₂±14	304	AAIJ	18G LHCb	pp at 13 TeV

Ξ_{cc}⁺⁺ DECAY MODES

Mode	Fraction (Γ _i /Γ)	Confidence level
Γ ₁ Λ _c ⁺ K ⁻ π ⁺ π ⁺	DEFINED AS 1	
Γ ₂ Ξ _c ⁺ π ⁺ , Ξ _c ⁺ → p K ⁻ π ⁺	0.0022±0.0006	
Γ ₃ Ξ _c ⁺ π ⁺ , Ξ _c ⁺ → Ξ _c ⁺ γ, Ξ _c ⁺ → p K ⁻ π ⁺	0.0031±0.0010	
Γ ₄ D ⁺ p K ⁻ π ⁺	<0.017	90%

Γ(Λ_c⁺ K⁻ π⁺ π⁺)/Γ_{total} Γ₁/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
seen	AAIJ	17BC LHCb	12 std significance

Γ(Ξ_c⁺ π⁺, Ξ_c⁺ → p K⁻ π⁺)/Γ_{total} Γ₂/Γ

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

$$\Gamma(\Xi_c^+\pi^+, \Xi_c^+ \rightarrow pK^-\pi^+)/\Gamma(\Lambda_c^+K^-\pi^+\pi^+)$$

$$\Gamma_2/\Gamma_1$$

VALUE (units 10 ⁻³)	DOCUMENT ID	TECN	COMMENT
2.2±0.6±0.1	¹ AAIJ	18BA LHCb	Ratio 91 over 289 events
¹ AAIJ 18BA reports $[\Gamma(\Xi_{cc}^{++} \rightarrow \Xi_c^+\pi^+, \Xi_c^+ \rightarrow pK^-\pi^+)/\Gamma(\Xi_{cc}^{++} \rightarrow \Lambda_c^+K^-\pi^+\pi^+)] / [B(\Lambda_c^+ \rightarrow pK^-\pi^+)] = (3.5 \pm 0.9 \pm 0.3) \times 10^{-2}$ which we multiply by our best value $B(\Lambda_c^+ \rightarrow pK^-\pi^+) = (6.35 \pm 0.25) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.			

$$\Gamma(\Xi_c^{\prime+}\pi^+, \Xi_c^{\prime+} \rightarrow \Xi_c^+\gamma, \Xi_c^+ \rightarrow pK^-\pi^+)/\Gamma(\Xi_c^+\pi^+, \Xi_c^+ \rightarrow pK^-\pi^+)$$

$$\Gamma_3/\Gamma_2$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
1.41±0.17±0.10	756	¹ AAIJ	22G LHCb	pp at 13 TeV
¹ The photon in the $\Xi_c^{\prime+} \rightarrow \Xi_c^+\gamma$ process is not reconstructed. Analysis uses two disjoint subsamples triggered on and independently from the signal.				

$$\Gamma(D^+pK^-\pi^+)/\Gamma(\Lambda_c^+K^-\pi^+\pi^+)$$

$$\Gamma_4/\Gamma_1$$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.7 × 10⁻²	90	AAIJ	19AO LHCb	pp at 13 TeV

Ξ_{cc}^{++} REFERENCES

AAIJ	22G	JHEP 2205 038	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	20J	JHEP 2002 049	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	19AO	JHEP 1910 124	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	18BA	PRL 121 162002	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	18G	PRL 121 052002	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	17BC	PRL 119 112001	R. Aaij <i>et al.</i>	(LHCb Collab.)