NODE=S065

Ξ_{cc}^{+}

$I(J^P) = ?(?^?)$ Status: ∗

OMITTED FROM SUMMARY TABLE

NODE=S065

Nominally the isospin partner of the Ξ_{cc}^{++} (ccu). While the SELEX experiment (MATTSON 02, OCHERASHVILI 05) claimed an observation of this state, subsequent searches by BABAR (AUBERT,B 06D), Belle (CHISTOV 06, KATO 14), and LHCb (AAIJ 13CD, AAIJ 20AX) did not find any significant signal or evidence for the Ξ_{cc}^{+}. However, AAIJ 21AE reports that its search for $\Xi_{cc}^{+} \to \Xi_{c}^{+}\pi^{+}\pi^{-}$, when combined with a prior search for $\Xi_{cc}^{+} \to \Lambda_{c}^{+}K^{-}\pi^{+}$ decays in AAIJ 20AX, yields a signal at 2.9 σ global significance (4.0 σ local).

Ξ_{cc}^{+} MASS

NODE=S065M

NODE=S065M

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
3518.9±0.9 OUR AVERAGE				
3518 ±3	6	[1] OCHERASHVI..05	SELX	Σ^- nucleus ≈ 600 GeV
3519 ±1	16	[2] MATTSON 02	SELX	Σ^- nucleus ≈ 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3623.0±1.4	368 ± 193	[3] AAIJ 21AE	LHCB	pp at 7, 8, 13 TeV

[1] OCHERASHVILI 05 claims "an excess of 5.62 events over ... 1.38 ± 0.13 events" for a significance of 4.8 σ in pD^+K^- events.

NODE=S065M;LINKAGE=OC

[2] MATTSON 02 claims "an excess of 15.9 events over an expected background of 6.1 ± 0.5 events, a statistical significance of 6.3 σ" in the $\Lambda_c^+K^-\pi^+$ invariant-mass spectrum. The probability that the peak is a fluctuation increases from 1.0×10^{-6} to 1.1×10^{-4} when the number of bins searched is considered.

NODE=S065M;LINKAGE=A

[3] Uncertainties are statistical only. Because of undetermined systematic uncertainties in the extraction of this result it cannot be considered a mass measurement. AAIJ 21AE performs a combined fit to its $\Xi_{cc}^{+} \to \Xi_{c}^{+}\pi^{+}\pi^{-}$ data and the $\Xi_{cc}^{+} \to \Lambda_{c}^{+}K^{-}\pi^{+}$ data from AAIJ 20AX, finding a global significance of 2.9 σ (4.0 σ local).

NODE=S065M;LINKAGE=B

Ξ_{cc}^{+} MEAN LIFE

NODE=S065T

NODE=S065T

VALUE (10^{-15} s)	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<33	90	MATTSON 02	SELX	Σ^- nucleus, ≈ 600 GeV

Ξ_{cc}^{+} DECAY MODES

NODE=S065215;NODE=S065

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$\Lambda_c^+K^-\pi^+$	not seen	DESIG=1
Γ_2	$\Xi_c^+\pi^+\pi^-$	not seen	DESIG=3
Γ_3	pD^+K^-		DESIG=2

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

NODE=S065R01

NODE=S065R01

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.36±0.21	6	OCHERASHVI..05	SELX	Σ^- ≈ 600 GeV

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

NODE=S065R00

NODE=S065R00

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	[1] AAIJ 20AX	LHCB	pp at 7, 8, 13 TeV

[1] No significant signal is observed in the mass range 3.4–3.8 GeV

NODE=S065R00;LINKAGE=A

$\Gamma(\Xi_c^+ \pi^+ \pi^-)/\Gamma_{total}$ Γ_2/Γ

NODE=S065R02
NODE=S065R02

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
not seen	95	145 ± 139	[1] AAIJ	21AE	LHCB	pp at 7, 8, 13 TeV

[1] No significant signal is seen in the mass range 3.4–3.8 GeV. AAIJ 21AE performs a combined fit to its $\Xi_{cc}^+ \to \Xi_c^+ \pi^+ \pi^-$ data and the $\Xi_{cc}^+ \to \Lambda_c^+ K^- \pi^+$ data from AAIJ 20AX, finding a global significance of 2.9 σ (4.0 σ local).

NODE=S065R02;LINKAGE=A

Ξ_{cc}^+ REFERENCES

NODE=S065

AAIJ	21AE	JHEP 2112 107	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	20AX	SCPMA 63 221062	R. Aaij *et al.*	(LHCb Collab.)
KATO	14	PR D89 052003	Y. Kato *et al.*	(BELLE Collab.)
AAIJ	13CD	JHEP 1312 090	R. Aaij *et al.*	(LHCb Collab.)
AUBERT,B	06D	PR D74 011103	B. Aubert *et al.*	(BABAR Collab.)
CHISTOV	06	PRL 97 162001	R. Chistov *et al.*	(BELLE Collab.)
OCHERASHVI...	05	PL B628 18	A. Ocherashvili *et al.*	(FNAL SELEX Collab.)
MATTSON	02	PRL 89 112001	M. Mattson *et al.*	(FNAL SELEX Collab.)

REFID=61488
REFID=61613
REFID=55801
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REFID=51290
REFID=51431
REFID=50832
REFID=48761