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Title:	First determination of the spin and parity of the charmed-strange baryon ξc (2970)+.
Authors:	Patra, Sourav (/jspui/browse?type=author&value=Patra%2C+Sourav)
Keywords:	charmed bayrons strong interactions
Issue Date:	2021
Publisher:	American Physical Society
Citation:	Physical Review D, 103(11).
Abstract:	We report results from a study of the spin and parity of Ξcð2970Þþ using a 980 fb−1 data sample collected by the Belle detector at the KEKB asymmetric-energy eþe− collider. The decay angle distributions in the chain Ξcð2970Þþ → Ξcð2645Þ0πþ → Ξþ c π−πþ are analyzed to determine the spin of this charmed-strange baryon. The angular distributions strongly favor the Ξcð2970Þþ spin J ¼ 1=2 over 3=2 or 5=2, under an assumption that the lowest partial wave dominates in the decay. We also measure the ratio of Ξcð2970Þþ decay branching fractions R¼B½Ξcð2970Þþ→Ξcð2645Þ0πþ=B½Ξcð2970Þþ→Ξ00 c πþ¼ 1.670.29ðstatÞ þ0.15 −0.09 ðsystÞ0.25ðISÞ, where the last uncertainty is due to possible isospin-symmetrybreaking effects. This R value favors the spin-parity JP ¼ 1=2þ with the spin of the light-quark degrees of freedom sl ¼ 0. This is the first determination of the spin and parity of a charmed-strange baryon.
Description:	Only IISER Mohali authors are available in the record.
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