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Search for CP violation in charm baryon decays

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The LHCb experiment was designed to play a crucial role in particle physics and flavour physics research. Since its beginning, LHCb has performed high-precision measurements of CP violation in decays of hadrons containing the charm quark, observing direct CP violation in the decays of the D^0 meson into two charged particles for the first time in 2019. However, CP violation in baryon decays has never been observed, and this measurement complements various measurements made to date. These measurements are a crucial aspect of the Standard Model for understanding baryon asymmetry in the universe and identifying signals of New Physics. This contribution presents recent developments in the measurement of direct CP violation, ΔA_{CP} , of the Λ_c^+ baryon in single Cabibbo-suppressed decays $\Lambda_c^+ \rightarrow pK^+K^-$ and $\Lambda_c^+ \rightarrow p\pi^+\pi^-$, using data collected by LHCb during Run 2. This analysis will improve the precision of ΔA_{CP} by an order of magnitude with respect to the previous measurement made by LHCb with data from Run 1.

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