Contribution ID: **131** Type: **not specified**

Multi-strange baryon spectroscopy in charm decays at LHCb

Tuesday 4 February 2025 16:50 (25 minutes)

The study of excitation spectra of hadrons is a crucial experimental tool to understand the binding mechanism of quarks in the strong interaction. While big advances have been made in recent years in the study of heavy-flavour hadrons containing a charm (c) or beauty (b) quark, the field of multi-strange (s) baryons, especially $\Xi^{0,-}$ (ssu, ssd) and Ω^- (sss), is largely unexplored. To date, only a limited amount of states (10 for $\Xi^{0,-}$ and 4 for Ω^-) are known, most of them seen with very low statistics in small fixed-target experiments in the 1980s but never experimentally confirmed. The vast LHCb dataset of charm hadrons such as the Ω_c^0 baryon offers a rare opportunity to search for missing states in the excitation spectra of strange baryons by looking at decays of the Ω_c^0 baryon such as $\Omega_c^0 \to \Xi^- \pi^+ K^- \pi^+$. I will discuss some ideas and preliminary results on how a search at LHCb can be performed.

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