



LHC Seminar

SPEAKER: **Andrea Merli**

TITLE: **Searches for CP violation in multibody baryon decays at LHCb**

DATE: 22 Oct 2019, 11:00

PLACE: 500/1-001 - Main Auditorium

ABSTRACT

The phenomenon of CP violation has been observed in the strange, beauty, and charm meson systems, but not yet in the decay of any baryon. Decays of beauty baryons to final states consisting of hadrons with no charm quarks are predicted to have non-negligible CP asymmetries in the SM, potentially as large as 20% for certain three-body decay modes. The LHCb experiment is collecting samples of beauty baryons of unprecedented size, allowing for groundbreaking studies of CP violation in these decays that can test the validity of the CKM mechanism in the baryon sector. We report on the latest searches for CP violation in this sector with the LHCb data, using new and updated results with Run1 and Run2. In the decay mode $\Lambda_b^0 \rightarrow p \pi^- \pi^+ \pi^-$, CPV is not observed, though a deviation from the CP conservation hypothesis of 2.9σ is found. Parity violation is observed for the first time in a beauty baryon decay, with a significance of 5.5σ . This and other results are presented along with prospects for future studies.

Organised by: M. Mangano, M. Pepe-Altarelli, G. Unal.....
Refreshments will be served at 10h30