Contribution ID : **225** Type : **Oral Presentation**

Particle identification in LHC Run 3 pp collisions at $\sqrt{s}$=13.6 TeV using the ALICE TPC and TOF detectors

Tuesday, 7 February 2023 15:10 (15)

The study of the strongly-interacting matter will benefit from larger data samples that will be collected in Run 3, thanks to major upgrades of the ALICE detectors. The main focus will be on rare probes and the study of observables that were not accessible with previous data. The LHC Run 3 has started and pp collisions at the unprecedented centre-of-mass energy of $\sqrt{s} = 13.6$ TeV have been recorded. The ALICE Collaboration has collected approximately 20 pb^{-1} of minimum-bias pp collision events, which correspond to about 30 times more data than that collected in Run 2. In November 2022, a sample of about 1 million Pb-Pb collisions at $\sqrt{s_{NN}}$ = 5.36 TeV has also been collected. These high-quality data will be used in a preliminary phase for the characterization of the new detectors and calibrations.

In this talk, the performance regarding particle identification with the ALICE Time Projection Chamber and Time-Of-Flight detectors using a newly developed analysis framework will be presented. The results of this work will be compared with that of Run 2 to assess the quality of the new data and of the detector calibrations. In addition, perspectives on the near-future studies will be discussed based on the large amount of data that ALICE will be able to record in Run 3.

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Session Classification : Parallel Session IA (Chair : Dr Lokesh Kumar)

Track Classification : Upcoming facilities, upgrades, and instrumentation