Contribution ID: **36** Type: **not specified**

Commissioning of the CGEM Inner Tracker

Thursday 17 October 2024 09:30 (25 minutes)

The extension of the BESIII experiment (IHEP, Beijing) until 2030 was the reason for a program to improve both the accelerator and the detector. In particular, the current inner drift chamber suffers from aging and it is proposed to replace it with a detector based on cylindrical GEM (CGEM) technology.
The inner CGEM tracker consists of three coaxial layers of triple GEM. The tracker is designed to restore efficiency, improve z-determination and secondary vertex position reconstruction with a resolution of 150 μm in the xy-plane and better than 500 μm along the beam direction.
A special readout system was developed: The signals are processed by TIGER, a custom 64-channel ASIC that provides analog charge readout via a fully digital output to an FPGA-based readout module, the GEM Read Out Card. The module configures the ASICs and organizes the incoming data by creating the event packets when the trigger arrives. The three layers were assembled in October 2023 and a cosmic ray data collection campaign is underway to evaluate the performance of the CGEM tracker prior to installation. In this presentation, the general status of the CGEM project will be presented with special attention to the full cosmic ray characterization and the first implementation of the uTPC algorithm on a cylindrical GEM.

Author: CIBINETTO, Gianluigi (CGEM-IT working group, INFN Ferrara)

Co-authors: CIBINETTO, Gianluigi (INFN Ferrara); GRECO, Michela (INFN Torino & University)

Presenter: CIBINETTO, Gianluigi (CGEM-IT working group, INFN Ferrara)

Session Classification: Session 11