

A Cylindrical GEM Inner Tracker for the BESIII experiment at IHEP

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The Beijing Electron Spectrometer III (BESIII) is a multi-purpose detector that collects data provided by the collision in the Beijing Electron Positron Collider II (BEPCII), hosted at the Institute of High Energy Physics of Beijing. Since the start of its operation, BESIII has collected the world's largest sample of J/ψ and $\psi(2s)$. Due to the unprecedented luminosity of the BEPCII, the most inner part of the Multilayer Drift Chamber (MDC) is showing aging effects. It has been proposed an replacement based on the new technology of Cylindrical Gas Electron Multipliers (CGEM).

The CGEM-IT project will deploy several new features and innovation with respect the other state-of-art GEM detector: the μ TPC and analog readout, with time and charge measurements will allow to reach the 130 μ m spatial resolution in 1 Tesla magnetic field requested by the BESIII collaboration; the Rohacell, a PMI foam, will give solidity to cathode and anode, with very low impact on material budget; the jagged anode will allow to reduce the interstrip capacitance.

In this presentation, an update of the status of the project will be presented, with a particular focus on the results with planar and cylindrical prototypes with cosmic rays and test beams data. These results are beyond the state of the art for GEM technology in magnetic field. The CGEM-IT project has been founded by the European Commission in the action H2020-RISE-MSCA-2014.

Summary

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