Quark Matter 2014 - XXIV International Conference on Ultrarelativistic Nucleus-Nucleus Collisions



Contribution ID: 664

Type: Poster

Determination of tolerances of mirror displacement and radiator gas impurity for the CBM RICH detector

Tuesday 20 May 2014 16:30 (2 hours)

The Compressed Baryonic Matter (CBM) experiment will be a dedicated heavy-ion experiment at the future FAIR facility. In order to identify electrons, a RICH detector and several layers of TRDs will be employed. The RICH detector will be operated with CO2 as a radiator gas, a spherical glass mirror plane, and MAPMTs as photon detectors. The mirror system consists of about 70 square mirror tiles of an area of about 40x40 cm2 each. To verify the developed RICH concept a laterally scaled prototype has been constructed, in which all modules of the main components have approximately the same dimensions and properties as foreseen for the full detector. The mirror system of the prototype consists of four tiles, which enables studies of mirror-boarder effects on Cherenkov rings and their reconstruction and fit quality. The prototype has been implemented in the CBM software framework with realistic properties of the detector components. Its performance has been simulated and measured during beam times at the CERN-PS facility with electron-pion beams of momenta between 2 and 10 GeV/c.

Besides many important aspects that guaranty successful operation of the detector, the determination of upper limits of gas impurity and mirror displacements have systematically been simulated and measured. The results will be presented in this contribution.

On behalf of collaboration:

CBM

Author: MAHMOUD, Tariq (Universität Gießen)

Co-author: HOEHNE, Claudia (U)

Presenter: MAHMOUD, Tariq (Universität Gießen)

Session Classification: Poster session

Track Classification: Future Experimental Facilities, Upgrades, and Instrumentation