Contribution ID: **454** Type: **Poster**

Study of the material budget and data rates for the STS detector system of the CBM experiment

Friday 8 April 2022 14:08 (4 minutes)

The Compressed Baryonic Matter (CBM), a fixed target experiment is under development at the Facility for Anti-Proton and Ion Research (FAIR) in Darmstadt (Germany). The aim of the experiment is to study the QCD phase diagram of strongly interacting matter at high density and moderate temperature employing heavy-ion beams in the energy range between 2 AGeV –11 AGeV.

The experiment is designed to run with beam intensities up to 10ˆ9 Au +Au particles/sec and an interaction rate of up to 10ˆ7 collisions/sec. Therefore, fast and free streaming electronics is needed for read-out and data transfer. The silicon tracking system (STS), installed inside a 1 Tm magnet, is the key detector for tracking charged particles. It uses double-sided microstrip silicon sensors of four different sizes to match the varying particle occupancy from the beam axis towards the detector periphery. The read-out electronics are connected to the sensors via polyimide - Al micro-cables placed outside the active region of STS to minimize the material budget. Detailed realistic knowledge of the detector geometry, including both active and passive material, is necessary to estimate the material budget of the detector which has a large impact on the absorption of delta electrons created in beam-target interaction, as well as in nuclear interaction of particles created in the heavy-ion collision with the active and passive materials. We present the status of the simulations of the STS detector geometry and its impact on the expected signal rates.

Primary author: Mr SHIROYA, Mehulkumar

Presenter: Mr SHIROYA, Mehulkumar

Session Classification: Poster Session 3 T15_1

Track Classification: Future facilities and new instrumentation