Contribution ID: **310** Type: **Poster Presentation**

Challenges and prospects for the Silicon Tracking System of CBM in the first tests with heavy ions collisions

Monday 4 November 2019 17:40 (20 minutes)

The Compressed Baryonic Matter (CBM) experiment at the FAIR facility aims to explore the QCD phase diagram at very high baryon densities, where a first order phase transition from hadronic to partonic matter as well as a chiral phase transition is expected to occur.
The Silicon Tracking System is the central detector for momentum measurement and charged-particle identification. It is designed to measure up to 1000 charged particles in A+A collisions between 0.1 and 10 MHz interaction rate, to achieve a momentum resolution in a 1 Tm dipole magnetic field of better than 2%, and to be capable of identifying complex particle decays topologies, e.g., such with strangeness content. The STS employs high-granularity double-sided silicon strip sensors matching the non-uniform track density, and fast self-triggering electronics with a free streaming data acquisition system and online event selection. With the resulting 1.8 million readout channels, it poses the most demanding requirements regarding bandwidth and density of all CBM detectors.
In the context of FAIR phase 0, the mini-CBM (mCBM) project aims to prove the concept of free-streaming data generation, transport and reconstruction, as well as to provide a test setup for all CBM subsystems using the existing GSI/FAIR accelerator facilities. The STS deployed a demonstrator of one small tracking station with full readout chain. The prototype, called mSTS, has been operated in Ag+Au collisions at energies above 1.59 AGeV and overall interaction rates up to 40 MHz, which is similar to a realistic experimental scenario. This allows evaluating the detector performance integrated with other subsystems into a free-streaming DAQ. This presentation aims to describe the main technical challenges and prospects for the STS and to summarize the results of the latest test campaign.

Author: RODRIGUEZ RODRIGUEZ, Adrian (Goethe University Frankfurt am Main)

Presenter: RODRIGUEZ RODRIGUEZ, Adrian (Goethe University Frankfurt am Main)

Session Classification: Poster Session

Track Classification: Future facilities and instrumentation