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Track measurements in the high multiplicity environment at the CBM experiment

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In the Compressed Baryonic Matter (CBM) experiment at FAIR, the Silicon Tracking System (STS) will perform track reconstruction and momentum determination of the charged particles created in interactions of heavy-ion beams with nuclear targets. The STS will consist out of 8 tracking layers located at distances between 30 cm and 100 cm downstream of the target inside the 1 T magnetic dipole field. An ultra-low material budget is required to achieve momentum resolution of the order of $\Delta p/p = 1\%$. Thus come the restrictions on the location of power-dissipating front-end electronics to be placed outside the physics aperture. The active volume of the STS is built from 300 µm thick double-sided silicon microstrip sensors mounted onto lightweight carbon fiber support ladders. The sensors will be read out through ultra-thin micro-cables with fast self-triggering electronics at the periphery of the stations where also other infrastructure such as cooling can be placed.

I will present the development status of the detector system, highlighting the overview of the STS layout, tracking algorithms, performance simulations and test results with prototypes.

Primary author: Mr GHOSH, Pradeep (GSI Darmstadt - Goethe Univeritaet Frankfurt)

Presenter: Mr GHOSH, Pradeep (GSI Darmstadt - Goethe Univeritaet Frankfurt)

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