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Overview of the Silicon Tracking System for the CBM experiment

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The CBM experiment at FAIR will explore the QCD phase diagram in the region of high net baryonic densities and moderate temperatures by colliding heavy ions at beam energies up to 45 GeV/nucleon. The physics program includes the study of the equation-of-state of nuclear matter in mentioned region of the phase diagram and the search for the de-confinement and chiral phase transition, and the critical endpoint. The Silicon Tracking System (STS) is the core tracking detector of the experiment, it is designed to provide track reconstruction and momentum determination of charged particles produced in beam-target interactions at very high hit rates (up to 10 MHz) and high multiplicity. It will be located downstream the target inside a 1T dipole magnet to achieve momentum resolution of 1%. The STS consists of 8 stations assembled out of 300 μm thick silicon microstrip sensors providing material budget of 1% X_0 . The sensors will be read out through multi-line micro-cables with fast self-triggered electronics for the online track reconstruction.

The current status of the system development will be presented including recent developments of the components, simulations of the performance of the detector and latest in-beam test results.

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