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The Silicon Tracking System of the CBM Experiment at FAIR

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The Compressed Baryonic Matter (CBM) experiment at the future Facility for Antiproton and Ion Research (FAIR) aims to study the properties of nuclear matter at high net-baryon densities and moderate temperatures. The Silicon Tracking System (STS) is the key detector to reconstruct with a high efficiency up to 1000 charged particle trajectories created in heavy-ion collisions at interaction rates of up to 10 MHz. It will determine the momentum of the particles with a momentum resolution $\Delta p/p \approx$ 1-2% which requires ultralow detector material budget of 0.3-1% X0 per layer. The detector comprise eight layers of double-sided silicon microstrip sensors and will be placed inside the 1 Tm superconducting magnet which limits the space available, which in turn requires advanced cooling approaches and mechanical design with precise tracking layers alignment. The microstrip sensors have to be radiation hard and checked for their quality optically and electrically before the assembly. This presentation summarizes the status of developments for the CBM STS as well as for the detector demonstrator in a framework of mCBM campaign at SIS18@GSI.

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