

Silicon Tracking for the Compressed Baryonic Matter Experiment at FAIR

The Compressed Baryonic Matter (CBM) experiment at the international Facility for Antiproton and Ion Research (FAIR) will conduct a comprehensive research programme on nuclear matter at high net baryonic densities. The fixed-target detector will record hadronic, leptonic and photonic observables from proton-nucleus and nucleus-nucleus collisions. Many of them are rare so that high collision rates up to 10 MHz will have to be mastered at minimum bias. The central component is a silicon tracking system for the trajectory and momentum determination of the hundreds of charged particles created in the collisions. Their efficient reconstruction is prerequisite for essentially all CBM observables. The tracker will comprise radiation hard silicon microstrip detectors and self-triggering readout electronics assembled into a large-area low-mass system. Progress with the design of the system, the assessment of its expected performance, and the realization of prototype components will be reported.

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Track Classification: Experiments upgrade, future facilities and instrumentations