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Development of the Silicon Tracking System for the Compressed Baryonic Matter (CBM) Experiment at FAIR

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The Compressed Baryonic Matter (CBM) experiment will conduct a comprehensive research programme on nuclear matter at high net baryonic densities. The Silicon Tracking System (STS) is the central detector of the CBM experiment. Its task is the standalone trajectory reconstruction of the high multiplicities of charged particles originating from high-rate beam-target interactions. The detector system shall be operational from the start of the CBM physics program at SIS-100 in 2018, and later at SIS-300. The silicon microstrip detectors must be radiation hard and are read out by a fast self-triggering front-end electronics. A low-mass construction must be achieved avoiding the front-end electronics, the cooling and cabling infrastructure in the aperture. The layout of the STS, mechanical constraints and the expected radiation environment will be shown. Progress with the STS engineering design will be presented as well as results from in-beam tests of prototypes.

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