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## The CBM Transition Radiation Detector in Principle and First Time-Based Data Analysis

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The Compressed Baryonic Matter project (CBM) at the upcoming SIS100 heavy-ion accelerator at the FAIR (Darmstadt, Germany) will explore the QCD phase diagram in so far unknown regions of moderate temperatures and high baryonic densities for the hadronic freeze-out. Thus, the experiment is expected to gain progress in the understanding of the phase transition between hadronic matter and a quark-gluon plasma. The particle identification capabilities of detector experiments are crucial for such analyses, and the CBM Transition Radiation Detector (TRD) delivers an excellent electron-pion separation for momenta above 1.5 GeV/c as well as a high position resolution for track matching. The unprecedented particle rates in CBM set high requirements on the rate capabilities of the detectors, which will be demonstrated on the close-to-final CBM TRD prototypes. After this general introduction, we will focus on the event analysis and especially the principles of time-based analysis of TRD data (CERN Super Proton Synchrotron beamtime, 2014), which requires spatial and time clustering of the measured event data.

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