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Application of the Three-fluid Hydrodynamics-based Generator THESEUS in CBM at FAIR

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The Compressed Baryonic Matter experiment (CBM) aims to study the area of the QCD phase diagram at high net baryon densities and moderate temperatures. It is predicted by Three-fluid Hydrodynamics-based Event Simulator (THESEUS) that one of the signatures of phase transition is a change in shape of the mid-rapidity curvature and yield.

In this contribution we will present CBM performance for proton rapidity- transverse mass spectra. The results are obtained for Au+Au collisions at $\sqrt{(s_N N)} = 2.7 - 4.9$ GeV/c produced by THESEUS model. CBM detector response is simulated with the GEANT3 engine and reconstruction is done using the CbmRoot framework. Protons are identified with Time-of-Flight technique using 2 different approaches. Obtained spectra are corrected for detector biases using the UrQMD event generator. Results are compared with simulated values and sources of systematic biases are discussed.

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