

Dimuon measurement at CBM experiment

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The Compressed Baryonic Matter (CBM), currently under construction at the Facility for Anti-proton and Ion Research (FAIR) accelerator complex in Darmstadt, Germany aims to explore the QCD phase diagram at high baryon densities. Till date, no dilepton data have been collected in heavy-ion collisions at beam energies between 2A and 40A GeV. CBM aims to perform pioneering measurements of lepton pairs in nuclear collisions, employing both electron (e^+e^-) and muon ($\mu^+\mu^-$) channels, in the energy domain $\sqrt{s_{NN}} \sim 2.7\text{-}4.9$ GeV, using unprecedented reaction rates of up to 10 MHz. The Muon Chamber (MuCh) sub-system is dedicatedly designed to track the muons pairs coming from the decay of Low Mass Vector Mesons (LMVM) and J/ψ . The expected performance in the muon channel is compared in terms of signal significances and background components for nucleus-nucleus (NN) and hadron-nucleus (pN) collisions.

In this contribution, the details of the simulation framework, analysis techniques and results will be presented for the foreseen CBM energies.

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