

Status of the performance studies for strange hadron flow measurements in CBM at FAIR

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Measurements of the directed and elliptic flow of strange and multi-strange hadrons are an important part of the physics program of the Compressed Baryonic Matter experiment (CBM) at the future accelerator complex FAIR in Darmstadt, Germany. It was shown recently by studies from RHIC BES program that $dv_1/dy|_{y=0}$ and the difference between v_2 of particles and antiparticles in the $\sqrt{s_{NN}}$ region of a few GeV are of great interest for understanding a pattern of the phase transition between quark-gluon and hadronic matter. Precision measurements of these observables in CBM experiment will be a significant step forward in exploration of the QCD phase diagram in the region of a $\sqrt{s_{NN}} = 2-5$ GeV.

We present recent results from the CBM performance studies for measurements of the directed (v_1) and elliptic (v_2) flow of strange hadrons, Λ and K_s^0 . For performance studies we use CBMROOT environment for Monte-Carlo simulations and event reconstruction. Heavy-ion collisions at the FAIR beam energy of $E_{beam} = 10$ GeV are simulated using the UrQMD event generator. Kalman Filter Particle Finder (KFParticleFinder) package for hyperon reconstruction via their weak decays, and the Projectile Spectator Detector for event plane determination. Effects due to non-uniformity of the CBM detector response in flow studies are investigated using the Qn-vector corrections framework originally developed for ALICE experiment at the LHC CERN.

Primary author(s) : Dr. BLAU, Dmitry (NRC "Kurchatov Institute"); Dr. SELYUZHENKOV, Ilya (GSI - Helmholtzzentrum für Schwerionenforschung GmbH (DE)); Mr. KLOCHKOV, Viktor (GSI Helmholtzzentrum für Schwerionenforschung)

Presenter(s) : Dr. BLAU, Dmitry (NRC "Kurchatov Institute")

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