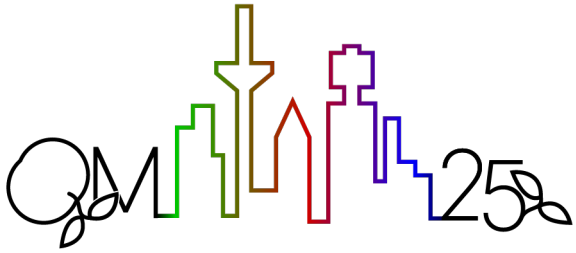

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First Look at Dilepton Flow in Au+Au collisions at $\sqrt{s_{NN}} = 2.23$ GeV with HADES

Dileptons are excellent probes for studying the hot, dense hadronic matter created in heavy-ion collisions, as they do not participate in the strong interaction in the medium and carry undisturbed information from all stages of the fireball evolution.

In this contribution, we present preliminary results on anisotropic flow of di-electrons produced in Au+Au collisions at $\sqrt{s_{NN}} = 2.23$ GeV, recorded by the High Acceptance Di-Electron Spectrometer (HADES) situated at GSI Darmstadt in March 2024. This collision system exhibits similar conditions to those during the final stages of a neutron-star merger.

One key aspect of this dilepton flow study is the reconstruction of pure electron pairs.
In HADES, this is achieved by employing a hadron-blind Ring-Imaging Cherenkov (RICH) detector. In a dense track multiplicity environment such as the one encountered in Au+Au collisions at this energy, one of the main background sources comes from mismatching RICH rings to incorrect track candidates. Recent advancements in the RICH calibration, using very selective time cuts that fully exploit the detector's excellent timing precision, have significantly improved the electron purity, yielding a more precise dilepton flow reconstruction.

This poster will focus on the status and first steps towards deriving the elliptic flow coefficient (v_2) for di-electrons, extending towards multidifferential studies as a function e.g. of centrality, transverse momentum, rapidity or invariant mass.

Category

Experiment

Collaboration (if applicable)

HADES

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