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Analysis of charged kaon flow in Ag+Ag collisions registered with HADES

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Charged kaons –mesons containing one (anti)strange quark –are predicted to be good probes of the Equation of State (EoS) of nuclear matter and possible changes of basic properties of kaons (like mass and decay constant) in hot and dense nuclear matter [1, 2]. These effects can be studied by comparing measured data to model calculations and the anisotropies of the azimuthal angle (flow) are expected to be particularly sensitive to them. Previous flow analyses of kaons, K^- in particular, were hampered by limited statistics [3].

The High Acceptance Di-Electron Spectrometer (HADES) [4] Collaboration carried out Ag+Ag collisions at beam energy of 1.58 GeV/nucleon and collected an unprecedented number of 10 billion events. This allows to study the flow of K^+ and K^- mesons with statistical errors smaller than before. Together with the high acceptance of the HADES setup, the analysis could significantly advance our understanding of the properties of hot and dense nuclear matter.

In this contribution, the preliminary results on transverse flow of K^+ and K^- mesons emitted from Ag+Ag collisions measured with HADES will be presented as maps of $v_{1,2}(p_T, y)$. The contribution will also include the corresponding raw (p_T, y) distribution and an overview of efficiency challenges specific to the measurement of flow.

References

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- [3] V. Zinyuk et al. (FOPI), Phys. Rev. C 90, 025210 (2014)
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