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Charged pion production in few-GeV heavy-ion collisions measured with HADES

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Experiments carried out with HADES (High Acceptance DiElectron Spectrometer) measure products of heavy-ion collisions in the beam energy regime of few GeV per nucleon. Its large geometric acceptance and reconstruction efficiency give insight into the extremely hot and dense nuclear matter produced in such reactions. The focal point of this contribution is the production of charged pions in Ag+Ag collisions at $\sqrt{s_{NN}} = 2.4$ GeV. Since these hadrons are the lightest particles formed in nuclear collisions, they are produced abundantly and provide a good probe for investigating the nature of nuclear matter in such extreme conditions. Transverse momentum/mass and rapidity distributions were obtained in four centrality classes spanning 40% of most central events and then used to reconstruct the total yield of pions per event. Several systematic aspects are also discussed, including different approaches to spectra extrapolation. The results are compared with state-of-art transport model calculations and other results from the HADES Collaboration. The latter comparison was used to obtain systematics of pion yield as a function of participating nucleons. This research project was financially supported by the GET_INVolved ERASMUS+ Programme of GSI/FAIR, HADES and the University of Warsaw.

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