

Dilepton production studied with the HADES spectrometer

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The High Acceptance Di-Electron Spectrometer (HADES) [1] operates at the Helmholtzzentrum fuer Schwerionenforschung (GSI) in Darmstadt, Germany. The main physics goal of the experiment is to investigate how the low energy QCD spectrum, experimentally known in vacuum in terms of hadron spectra, will change when the vacuum is heated and/or compressed. In this context, dilepton spectroscopy is a superior technique to directly access in-medium hadron properties. Measurement of e^+e^- production in $^{12}\text{C}+^{12}\text{C}$, $^{40}\text{Ar}+^{39}\text{KCl}$, $p+p$, $d+p$ and $p+^{93}\text{Nb}$ collisions were performed [2,3]. For the first time at 1-2 AGeV energy range contribution from the dense phase of the collision has been identified [4]. Properties of such an exotic radiation will be shown and discussed in this presentation.

From recently obtained e^+e^- pair spectra in $p+p$ and $p+^{93}\text{Nb}$ interactions at 3.5 GeV kinetic beam energy the inclusive production cross sections for neutral pions, η , ω and ρ mesons are extracted for the first time at these beam energies [5]. Furthermore the production mechanisms of the vector mesons, which are not known at these energies, are investigated. The direct comparison of $p+p$ and $p+^{93}\text{Nb}$ data allows us to investigate in-medium mass modification of vector mesons at nuclear ground state density. The obtained results will be compared to data from other experiments.

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- [3] G. Agakichiev et al. (HADES Collab.), Phys. Lett. B 663, 43 (2008).
- [4] A. Kugler et al. (HADES Collab.), proceedings of HADRON09.
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