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Dilepton measurements with HADES in $Ag + Ag$ and $p + p$ collisions at $1.58 GeV$ beam energy

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In this contribution we present results on the dielectron production in $Ag + Ag$ collisions (0-40% centrality) and $p + p$ interactions at $1.58 AGeV$ beam energy measured with the high acceptance dielectron spectrometer (HADES). The HADES RICH detector has been upgraded with a new photon detection camera which strongly enhances the electron efficiency and conversion pair rejection. With this upgrade, a signal-to-background ratio of about 1 is achieved in the dielectron spectrum around $500 MeV/c^2$, even in $Ag + Ag$ collisions. 5 billion $Ag + Ag$ collisions have been analyzed showing a signal up to the ϕ meson mass region. A clear excess of dileptons is seen above the contributions from initial state processes and late meson decays which serves as messenger of the dense medium created in heavy-ion collisions. This excess reveals the thermal properties and the lifetime of the medium but also gives insight into meson properties at high densities.

To disentangle the various contributions to the measured dielectron yield it is important to precisely understand the dielectron production in elementary reactions. Therefore, HADES has recently measured 0.5 billion $p + p$ collisions at the same energy, where preliminary results will be presented in addition. These serve as baseline for the understanding and interpretation of the $Ag + Ag$ data.

Category

Experiment

Collaboration (if applicable)

HADES

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