

Dielectron production in C+C collisions with HADES

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The HADES spectrometer installed at GSI Darmstadt is devoted to study production of di-electron pairs from proton, pion and nucleus induced reactions at 1-2 AGeV. The main goal is to search for in-medium modifications of spectral functions of the light vector meson ρ/ω at moderate temperatures and nuclear matter densities of $\rho_0 - 3^*\rho_0$ [1].

Spectroscopy of rare lepton pairs in reactions with abundant hadron production requires an efficient electron identification. In HADES it is achieved with a large geometrical acceptance (35% for pairs), fast electron identification in hadron blind RICH accompanied by set of Pre-Shower and TimeOfFlight counters and selective multistage trigger scheme. Particles momentum is measured by a tracking system surrounding a toroidal superconducting magnet.

The detector went into operational in 2002 and since then collected data from $^{12}\text{C}+^{12}\text{C}$ collisions at 2AGeV (2002), 1AGeV (2004) and proton-proton (2004) reactions at 2.2 GeV. The main goal of the measurement with $^{12}\text{C}+^{12}\text{C}$ system is to investigate dielectron enhancement found in $^{12}\text{C}+^{12}\text{C}$ and $^{40}\text{Ca}+^{40}\text{Ca}$ collisions at 1 AGeV in the pioneering experiments of DLS collaboration [2]. In the pp collisions we have focused on exclusive and inclusive η meson production which contributes to the invariant mass range of $140 \leq M_{e+e-} \leq 550 \text{ MeV}/c^2$.

In this contribution we would like to focus on the results obtained from $^{12}\text{C}+^{12}\text{C}$ collisions at 2 AGeV and 1 AGeV. Invariant mass, rapidity and transverse momentum distributions corrected for reconstruction efficiencies will be shown and compared with calculations based on the thermal (PLUTO) and microscopic (QMD, HSD,RQMD) transport models [3].

[1] P.Salabura et.al., Nucl. Phys. A749 (2005) 150c.

[2] R. J. Porter et al., Phys. Rev. Lett. 79 (1997) 1229.

[3] Shekter et al., Phys. Rev. C (2003);

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