Contribution ID: **946** Type: **Parallel Talk**

The electromagnetic response of resonance matter and other strange observations

Thursday, 6 July 2017 12:30 (15 minutes)

The matter formed in central heavy-ion collisions at a few GeV per nucleon is commonly understood as resonance matter, a gas of nucleons and excited baryonic states with a substantial contribution from mesonic, mostly pionic excitations. Yet, in the initial phase of the reaction the system is compressed to beyond nuclear ground state density and hence substantial modifications of the hadron properties are expected to occur.
The HADES experiment explores strongly interacting baryon-rich matter at moderate temperatures using rare and penetrating probes. It operates in the beam-energy range of 1-2A GeV where comparatively long-lived states of compressed matter are created.
In this talk we present key results on in-medium properties of hadrons obtained by the High Acceptance Di-Electron Spectrometer. The spectral distribution of virtual photon emitted from the collision zone of A+A collisions indicates strong medium effects beyond those resulting from a pure superposition of frequent but individual NN collisions. This observable, as well as the measured hadron abundances in the final state show features of a thermalized fireball. Baryon-driven medium effects influence significantly the rho meson in-medium spectral function and are considered essential in describing the low-mass dilepton spectra. While the measured abundance of all reconstructed particles are well described assuming thermalization, the double strange cascade Ξ(1321) production in A+A and p+A collisions shows however a sizeable enhancement above predictions of statistical hadronisation and transport model calculations. A deeper understanding of the microscopic properties of resonance matter requires systematic investigations of baryonic decays and these are studied in HADES making use of pion beams. This experimental program will be continued in the coming years with an upgraded HADES detector.

Experimental Collaboration

HADES

Primary author: GALATYUK, Tetyana (TU Darmstadt / GSI)

Presenter: GALATYUK, Tetyana (TU Darmstadt / GSI)

Session Classification: Heavy ion physics

Track Classification: Heavy Ion Physics