HK 46: Poster – Schwerionenkollisionen und QCD Phasen

Zeit: Donnerstag 14:00–16:00 Raum: P Foyer

HK 46.1 Do 14:00 P Foyer

Gluodissociation of bottomonium states in PbPb collisions at LHC energies — •Felix Brezinski and Georg Wolschin — Institut für Theoretische Physik der Universität Heidelberg, Philosophenweg 16, D-69120 Heidelberg, Germany, EU

We suggest that gluon-induced dissociation and screening of the Υ(nS) states explain the suppression of the Υ(2S+3S) states relative to the Υ(1S) ground state that has been observed by CMS in PbPb collisions at $\sqrt{s_{NN}} = 2.76$ TeV at the CERN LHC. The minimum-bias gluodissociation cross sections of the 1S - 3S states are calculated using a screened Cornell potential and a thermal gluon distribution. The 3S state dissolves due to screening before sizeable gluodissociation occurs, but for the 2S and 1S states there is an interplay between screening, gluodissociation, and feed-down from the χ_b(2P) and χ_b(1P) states. The calculated suppression of the Υ(2S) and Υ(3S) states relative to Υ(1S) is consistent with the CMS result, but allows for additional suppression mechanisms. The Υ(1S) suppression through gluodissociation is in excellent agreement with the CMS data.

HK 46.2 Do 14:00 P Foyer

The p-T-diagram of QCD — •Klaus Heckmann, Jochen Wambach, and Michael Buballa — Institut für Kernphysik, TU Darmstadt

We present a novel form of displaying the phase diagram of QCD matter. Rather than representing the phase diagram in terms of temperature and baryo-chemical potential or density, we choose to plot pressure vs. temperature. This has the advantage of a more direct comparison with other substances such as water or Helium. We include results from lattice QCD, nuclear astrophysics, model calculations of color superconductors and empirical input from heavy-ion collisions for quantitative statements. Due to relativistic effects there is an unphysical region in the p-T plane in which QCD matter cannot exist in equilibrium.

HK 46.3 Do 14:00 P Foyer

New HADES taking off — •Katharina Gill[1], Tetyana Galatyuk[1,2], Olga Pechenova[1], Vladimir Pechenov[3], and Joachim Stroth[1,3] for the HADES-Collaboration — [1]Goethe-Universität, Frankfurt — [2]ExtreMe Matter Institute EMMI, Darmstadt — [3]GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt

The HADES detector, installed at the GSI Helmholtzzentrum für Schwerionenforschung, is a unique apparatus to search for new states of matter with rare and penetrating probes. So far, due to the limited granularity of the inner time-of-flight system, measurements were restricted to medium size collision systems. The combined measurement of di-electrons and strangeness in Ar+KCl collisions has provided intriguing results and ask for a heavier collision systems and a higher statistics. A mayor improvement of the spectrometer in terms of granularity and particle identification capability is achieved with the new RPC time-of-flight detectors. The data acquisition was fully replaced introducing a modular system integrating trigger distribution, data transfer and a slow control data traffic to a single optical link. During the 64 hours of the commissioning beam time in August 2011, 17 TByte of data were taken for Au+Au collisions at $E_{kin} = 1.24$ GeV/u.
We present a study of the particle identification capabilities of the new HADES spectrometer. Electrons, pions, kaons, protons and light nuclei can be identified over a broad momentum range after a precise detector alignment and calibration.
Supported by BMBF (06 FY 9100 I), HIC for FAIR, EMMI and GSI.

HK 46.4 Do 14:00 P Foyer

Charged-hadron pseudorapidity distributions at LHC energies in the RDM — •David Roehrscheid and Georg Woslchin — Institut für theoretische Physik, Philosophenweg 16, 69120 Heidelberg

We present calculations for pseudorapidity distributions of charged hadrons in Pb-Pb collisions at LHC in the relativistic diffusion model. Drawing on earlier work on similar distributions at RHIC, we predict RDM parameters and the pseudorapidity distributions of charged hadrons for the next LHC run at 5.52 TeV center of mass energy per nucleon pair.