HK 55: Poster - Schwerionenkollisionen und QCD Phasen

Zeit: Mittwoch 16:45–16:45 Raum: HSZ 3.OG

HK 55.1 Mi 16:45 HSZ 3.OG

Production of p, d and t in Ar+KCl-Collisions at 1.76 AGeV — •Heidi Schuldes for the HADES-Collaboration — Goethe-Universität, Frankfurt am Main

This contribution present the final results on the production and emission of protons and light fragments in the reaction Ar+KCl at 1.76 AGeV measured with HADES. Yields and spectral shapes are confronted with the results gained from the analysis of charged pions and strange particles measured in the same run and their interpretation within the statistical model. We will demonstrate that the assumption of a purely thermalized source for protons and light fragments does not apply and will discuss the role of radial flow in this medium sized mass system.
Supported by BMBF (06 FY 9100 I and 06 FY 7114), HIC for FAIR, EMMI, GSI, HGS-Hire and HQM.

HK 55.2 Mi 16:45 HSZ 3.OG

Leptonenidentifikation in Au+Au bei 1,23 GeV/u — •Patrick Sellheim für die HADES-Kollaboration — IKF, Goethe-Universität Frankfurt

Das HADES (High Acceptance Di-Electron Spectrometer) Experiment am Helmholtzzentrum für Schwerionenforschung (GSI) in Darmstadt untersucht die Dileptonen und Strangenessproduktion in elementaren Nukleon-Nukleon sowie Schwerionenkollisionen.
Nach der Aufrüstung einzelner Detektorkomponenten konnte die lange geplante Au+Au Strahlzeit im Mai 2012 durchgeführt werden. Die Messung bei 1,23 GeV/u stellt das bisher schwerste gemessene Kollisionssystem unter HADES dar und stellt daher neue Herausforderungen an die Dileptonenrekonstrukion, auf die wir in diesem Beitrag eingehen werden.
Neben Informationen wie der Teilchengeschwindigkeit legen wir den Fokus besonders auf den Ring Imaging Cherenkov Detektor, welcher zur Leptonenidentifikation verwendet wird und präsentieren wichtige Schritte zur Verwendung der Detektorinformationen hinsichtlich einer erfolgreichen Leptonenidentifikation.
Gefördert durch BMBF (06FY9100I und 06FY7114), HIC for FAIR, EMMI, GSI and HGS-Hire.

HK 55.3 Mi 16:45 HSZ 3.OG

How I found high momentum leptons in HADES — •Szymon Harabasz[1,2], Tetyana Galatyuk[1], and Piotr Salabura[2] — [1]Technische Universität Darmstadt, Darmstadt, Germany — [2]Jagiellonian University, Cracow, Poland

The High Acceptance Di-Electron Spectrometer experiment, installed at GSI, Darmstadt, has measured rare penetrating probes and strange particles production in elementary nucleon-nucleon as well as in heavy-ion collisions. In recent years, an upgrade of the data acquisition system was carried out and a major improvement of the spectrometer in terms of granularity and particle identification capability has been made by replacing the TOFino detector with the new Resistive Plate Chamber (RPC) time-of-flight wall. Thanks to this, the heaviest system, Au+Au at a beam kinetic energy of 1.23 GeV/u has been measured by HADES in April - May 2012.

In such collisions, extracting a pure sample of very rare di-electrons radiated from a dense fireball plays a crucial role. Therefore, a careful electron identification is necessary. This can be achieved by exploring not only information from the Ring Imaging Cherenkov detector but also from the time-of-flight measurement in combination with an evidence of an electromagnetic shower formation.

In this contribution we present results on efficiency and purity of electron identification obtained from the combined information provided by the RPC and the electromagnetic shower detector.

Supported by BMBF (06FY9100I and 06FY7114), HIC for FAIR, EMMI, GSI and HGS-HIRe.

HK 55.4 Mi 16:45 HSZ 3.OG

Systematics of pi0 and eta Dalitz decays in the Gold on Gold beam time of HADES — •Claudia Behnke for the HADES-Collaboration — IKF, Goethe Universität Frankfurt

Lepton pairs emerging from decays of virtual photons are the most promising probes of dense hadronic matter. HADES measured systematically electron pair production in light, medium and heavy mass systems as well as in p and d induced reactions. The understanding of the corresponding experimental results calls for supporting studies from transport calculation. This contribution focuses on systematic studies of pi0 and eta Dalitz decays, relevant for the interpretation of the dynamics of the fireball created in the hot and dense stage. We will compare a clean sample of simulated mesons created with the PLUTO event generator to UrQMD cocktail simulations as well as real measured lepton pair distributions. Supported by BMBF (06FY9100I and 06FY7114), HIC for FAIR, EMMI, GSI, HGS-Hire and H-QM.

HK 55.5 Mi 16:45 HSZ 3.OG

New keys for interpreting A/A collisions realized at relativistic energies — •Christian Ythier and Genevieve Mouze — Université de Nice,06108 Nice cedex 2, France

Nucleus /Nucleus collisions at high energies should create a new state of nuclear matter of 0.17 yoctosecond, as any reaction leading to the complete fusion of projectile and target [1,2]. But at relativistic energies new phenomena should show themselves: The survival of the transverse momentum even in head-on lead/ lead collisions might be the signature of the motion in time of any charge. This new point of view leads to an interpretation of the color as being a three-dimensional time coordinate and even to a new interpretation of inertia [3]. [1] G. Mouze et al., http://arxiv.org/abs/1204.2647 [nucl-exp] 12 April 2012. [2] G. Mouze and C. Ythier, http://arxiv.org/abs/1211.3530 [nucl-exp] 15 nov 2012. [3] C. Ythier and G. Mouze, http://arxiv.org/abs/1212.3091 [physics.gen-ph] 19 Dec.2012.

HK 55.6 Mi 16:45 HSZ 3.OG

A new state of nuclear matter observed in transfer reactions — Genevieve Mouze and •Christian Ythier — Université de Nice, 06108 Nice cedex 2,France

The cross section curves for the formation, at the barrier, of trans-target isotopes of a heavy element by bombardment of a heavy target with various heavy ions, and those for the formation of isotopes of a superheavy element by complete fusion projectile and target, both are similar to the distribution of the neutron number N of a fission fragment around its most probable value [1,2]. This situation suggests that nucleons are transferred according to one and the same law in the fission reaction and in the transfer reactions: This law results from the creation of a new state of nuclear matter, having a lifetime of only 0.17 yoctosecond, and causing uncertainties in the neutron number N of the product amounting to 2.54 atomic mass unit, as measured by J. Terrell in his study of the prompt *neutron emission. [1] G. Mouze et al. http://arxiv.org/abs/1204.2647 [nucl-exp] 12 April 2012. [2] G. Mouze and C. Ythier, http://arxiv.org/abs/ 1211.3530 [nucl-exp] 15 nov.2012.