

HK 20: Invited Talks 2

Time: Tuesday 11:00–13:00

Location: T/HS1

Invited Talk HK 20.1 Tue 11:00 T/HS1
Cold nuclear matter effects studied in p-Pb collisions at the LHC — ●ALBERICA TOIA — Goethe University Frankfurt — GSI Darmstadt

The properties of strongly interacting matter at extreme conditions of temperature and energy densities are studied with heavy ion collisions at LHC. While the comparison of measurements performed in Pb-Pb collisions with the same measurements in proton-proton collisions had been quite successful, proton-nucleus collisions provide a reference to disentangle signatures of the formation of a deconfined hot medium, from those already present in cold nuclear matter, due to the complex structure of the colliding nuclei.

While most of the benchmarks from the control experiment indicate that initial state effects do not play a role in the observed suppression of hadron production observed in heavy ion collisions, several measurements of particle production in the low and intermediate momentum region indicate the presence of coherent and collective effects.

This presentation reviews in details the experimental results in ultra-relativistic p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV obtained recently at the CERN LHC, with special emphasis on the discovered collective phenomena compared with the measurements in p-p and Pb-Pb collisions at similar energies.

Invited Talk HK 20.2 Tue 11:40 T/HS1
Messungen mit den schwersten Kernen und weitere interessante neue Resultate — ●KIRILL LAPIDUS for the HADES-Collaboration — Physik-Department E12, Technische Universität München, James-Frank-Str. 1, 85748 Garching, Deutschland — Exzellenzcluster Universe, Boltzmannstr. 2, 85748 Garching, Deutschland

HADES is a fixed-target experiment located at the GSI Helmholtzzentrum für Schwerionenforschung and operating at the SIS18 accelerator in the range of beam energies of 1-2 GeV/u for nucleus-nucleus collisions, up to 3.5 GeV in proton-induced reactions. HADES explores

properties of the strongly-interacting matter in the regime of high baryonic densities and moderate temperatures, as probed in heavy ion reactions. Besides, proton- and pion-nucleus collisions are studied in order to quantify the effects of cold nuclear matter. Two pillars of the HADES physics programme are di-electron and strangeness measurements. The talk will be devoted to the fresh results harvested by HADES in the recent years. A heavy-ion run with Au+Au collisions at 1.23 GeV/u has been accomplished in 2012 and a number of interesting analyses both in the dilepton and in strange sectors will be discussed. In 2014 HADES measured particles produced in pion-induced reactions, employing light (carbon, polyethylene) and heavy (tungsten) nuclear targets. Of special interest here is the in-medium behaviour of strange hadrons and the physics of nucleon resonances. First results from this beam time will be presented as well. Supported by BMBF 05P12WOGHH and the Excellence Cluster “Universe”.

Invited Talk HK 20.3 Tue 12:20 T/HS1
Pygmy Dipole Resonances - Status and Perspectives — ●VERA DERYA — Institute for Nuclear Physics, University of Cologne

The so-called pygmy dipole resonance (PDR) appears as a concentration of $E1$ strength below the well-known isovector giant dipole resonance and was observed in medium-heavy and heavy neutron-rich nuclei [1]. Growing interest in the PDR is driven by its implications for fundamental questions concerning, e.g., the equation of state of nuclear matter under isospin asymmetric conditions as present in neutron stars, the origin and abundance of the elements in the universe, and isospin symmetry breaking. To approach a comprehensive understanding of the structure of the PDR throughout the nuclear landscape, different experimental techniques are applied using complementary probes on stable and unstable nuclei. An overview of recent results and future perspectives will be presented.

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[1] D. Savran, T. Aumann, and A. Zilges, Prog. Part. Nucl. Phys. 70 (2013) 210.