

HK 26: Eingeladene Hauptvorträge

Zeit: Dienstag 8:30–10:35

Raum: HSZ-02

Hauptvortrag HK 26.1 Di 8:30 HSZ-02
Highlights from ALICE — •KLAUS REYGERS for the ALICE-Collaboration — Universität Heidelberg, Physikalisches Institut, Im Neuenheimer Feld 226, 69120 Heidelberg

The ALICE experiment at the LHC explores the high temperature and density limit of QCD with Pb+Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV. Robust tracking over a large transverse momentum range ($0.1 < p_T < 100$ GeV) and excellent particle identification make ALICE a unique tool for characterizing the created QCD matter. A summary of results on Pb+Pb (and p+p) collisions will be presented, including global event properties, anisotropic flow, thermal radiation, jet quenching, and quarkonia. Results on p+Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV, also shown in this talk, shed light on cold nuclear matter effects. Finally, future plans of the ALICE experiment will be summarized.

Hauptvortrag HK 26.2 Di 9:05 HSZ-02
Collective flow in a hot, dense, and strongly interacting medium — •BJÖRN SCHENKE — Physics Department, Brookhaven National Laboratory, Upton, NY 11973, USA

The large collective flow measured at the Relativistic Heavy-Ion Collider at Brookhaven National Laboratory and the Large Hadron Collider at CERN is one of the most striking observations in heavy-ion experiments. This anisotropy of particle production in the plane transverse to the collision axis is interpreted as the fluid-dynamic response of the created strongly interacting matter to the initial collision geometry, which fluctuates event by event. I review recent developments in the theoretical description of the bulk dynamics of heavy-ion collisions with focus on viscous fluid-dynamics and models for the initial state and its fluctuations. Recent progress using a combined Yang-Mills and viscous fluid-dynamic framework has lead to great successes in describ-

ing a wide range of experimental data, leading to the unprecedented opportunity to extract quantitative information on the transport properties of the created quark-gluon plasma, such as its shear viscosity. This demonstrates how heavy-ion collisions can be used to study fundamental properties of quantum-chromodynamics.

Hauptvortrag HK 26.3 Di 9:40 HSZ-02
Strongly interacting matter in an external magnetic field — •PAVEL BUIVIDOVICH — Institute for Theoretical Physics, University of Regensburg

The current status of studies of the properties of strongly interacting matter in an external magnetic fields is reviewed. Both experimental and numerical evidences in favor of the Chiral Magnetic Effect and the anisotropic conductivity and superconductivity of hadronic matter and quark-gluon plasma are discussed. I also comment on the possible shift of the confinement-deconfinement phase transition due to the magnetic field.

Preisträgervortrag HK 26.4 Di 10:15 HSZ-02
Exploring QCD phase diagram in heavy ion collisions — •KRZYSZTOF REDLICH — University of Wrocław, Wrocław, Polen — Laureate of the Smoluchowski-Warburg-Prize

Based on the recent findings of Lattice Gauge Theory and effective models we introduce the phase structure of strongly interacting matter at finite temperature and density. We discuss, how the transition from hadronic phase to a quark gluon plasma can be explored experimentally in heavy ion collisions. The theoretical expectations will be contrasted with recent data obtained in heavy ion collisions at RHIC and LHC energies.