HK 59: Invited Talks II

Time: Thursday 11:00–12:30 Location: HBR 14: HS 1

Invited Talk HK 59.1 Thu 11:00 HBR 14: HS 1
Gamma spectroscopy with AGATA: New insights in nuclear excitations along the nuclear chart — •PETER REITER — University of Cologne, Institute of Nuclear Physics

The Advanced GAmma Tracking Array AGATA is a next generation high-resolution gamma-ray spectrometer for nuclear structure studies based on the novel principle of gamma-ray tracking. It is built from high-fold segmented germanium detectors that will operate in position-sensitive mode by employing digital electronics and pulse-shape decomposition algorithms. The unique combination of highest detection efficiency and position sensitivity allows studies with radioactive ion beams of lowest intensity. A growing number of AGATA modules was exploited in the leading infrastructures GANIL, GSI and LNL for nuclear structure studies in Europe. The performed experiments give insights into nuclear structure issues which are connected to single particles, collective degrees of freedom, nucleon interactions and symmetries. Most of the investigated nuclei are located outside the stability line and for stable nuclei the investigations concern unexplored configurations. Altogether the obtained results represent advances which could test theory in exclusive way and motivate new theoretical developments. Opportunities for future investigations with the foreseen more advanced phase of AGATA will be presented.

Invited Talk HK 59.2 Thu 11:30 HBR 14: HS 1
Anisotropic flow in heavy-ion collisions at high and low beam energies — •HANNAH ELFNER — GSI, Darmstadt, Germany — Goethe University, Frankfurt, Germany — FIAS, Frankfurt, Germany

The collective behavior of particles emitted from heavy-ion collisions is sensitive to the properties of the hot and dense medium that is produced. At high beam energies as they are studied at LHC or RHIC detailed measurements of higher order flow coefficients and their correlations are available. Comparing the experimental data for bulk observables with sophisticated dynamical hybrid approaches based on viscous hydrodynamics and hadronic transport allows conclusions about the transport coefficients of QCD matter and their temperature dependence. At lower beam energies as they are reached at GSI and in the future at FAIR the high density regime of QCD is explored. The collective flow measurements are sensitive to the equation of state of nuclear matter and recent progress concerning transport calculations with mean fields will be explained. In both cases, Bayesian multi-parameter analysis are employed to obtain results with quantified uncertainties.

Invited Talk HK 59.3 Thu 12:00 HBR 14: HS 1
Status of ALICE and ALICE 3 — •ALEXANDER SCHMAH — Gesellschaft fuer Schwerionenforschung, Darmstadt, Germany

ALICE is the dedicated heavy-ion experiment at the Large Hadron Collider at CERN with a focus on studying the quark-gluon plasma created in collisions between lead ions. In the year 2018 the Run 2 data taking period was finished, followed by an upgrade period where, among others, a new inner tracking system was installed and the time projection chamber (TPC) MWPC readout chambers were replaced by GEM based chambers. These upgrades allow a more than ten times higher data taking rate for the TPC, up to 50 kHz for Pb-Pb collisons, and more precise measurements of secondary vertices.

ALICE 3 is under discussion as a successor for the current ALICE experiment with a completely new setup. The ALICE 3 tracking detectors are solely based on silicon-pixel technology. For the most inner layers the ultra-thin MAPS based layers will be bent to cylindrical shapes. This will allow the measurement of charged particles at very low transverse momenta down to a few tens of MeV/c. With the new setup, 20–50 times higher rates can be achieved compared to the Run 3 setup of ALICE.

In this talk I will give an overview of the current ALICE Run 3 results from the pp and Pb-Pb data taking periods and discuss the status of ALICE 3.