# SYEC 2: Strong-Interaction Matter under Extreme Conditions II

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

**Invited Talk** SYEC 2.1 Wed 11:00 HBR 14: HS 1

**Unravelling the phase structure of strong-interaction matter with high-energy heavy-ion experiments** — •Tetyana Galatyuk — Technische Universität Darmstadt — GSI, Darmstadt

Large efforts worldwide are being devoted to the study of nuclear matter far from its ground state. The goal of this endeavour is to understand the microscopic properties and the phase structure of strong-interaction matter, which is governed by the laws of Quantum Chromo Dynamics (QCD), by creating extreme states of matter in the laboratory. The measurement of a comprehensive set of diagnostic probes offers the possibility to find signatures of new phases of QCD matter, and to discover the conjectured first order deconfinement and chiral phase transition, and the critical endpoint. In this talk I will discuss relevant observables to study criticality, emissivity, vorticity and the equation-of-state of strong-interaction matter.

**Invited Talk** SYEC 2.2 Wed 11:45 HBR 14: HS 1

**Neutron star mergers in numerical relativity** — •Masaru Shibata — Am Mühlenberg 1, Potsdam-Golm 14476

Neutron star mergers are not only the sources of gravitational waves but also the engines of high-energy astrophysical phenomena such as gamma-ray bursts and kilonovae. They are also the promising sources for synthesizing heavy elements through the rapid neutron capture process. To theoretically investigate these aspects of the neutron star mergers, we have to perform a numerical simulation in which relevant physics – general relativity, magnetohydrodynamics, neutrino transport, equation of state for high density matter – are taken into account. In this talk, I will report our latest effort for such a simulation paying particular attention to the kilonovae and nucleosynthesis.