SYEC 1: Strong-Interaction Matter under Extreme Conditions I

Time: Wednesday 9:00–10:30 Location: HBR 14: HS 1

Invited Talk SYEC 1.1 Wed 9:00 HBR 14: HS 1

Strong-interaction Matter under Extreme Conditions: a Review — •Guy D. Moore — Institut für Kernphysik, TU Darmstadt, Darmstadt, Germany

I will give a brief review of the thermodynamics and dynamics of strongly interacting (QCD) matter at the extremes of temperature and density which can be achieved in relativistic heavy ion collisions and which occurred in the very early Universe and occur today in the most compact astrophysical bodies. I will discuss the phase diagram, what theoretical tools can be brought to bear on it, what regions are accessible experimentally, and what we do and don't know. I will also describe attempts to predict the nonequilibrium behavior of strong-interaction matter as observed in heavy ion collisions.

Invited Talk SYEC 1.2 Wed 9:45 HBR 14: HS 1

Theory of Strong-Interaction Matter — •Gergely Endrodi — Bielefeld University, Bielefeld, Germany

In this talk I will review the current status of selected topics at the forefront of lattice field theory research on QCD under extreme conditions. In particular, I will concentrate on observables relevant for the equilibrium description of strongly interacting matter, including the equation of state, the phase diagram, as well as anomalous transport phenomena. The extreme conditions to be discussed encompass high temperatures, nonzero quark densities as well as background electromagnetic fields. These act as relevant control parameters for several physical systems ranging from dense neutron stars through the early Universe to off-central heavy-ion collisions.