

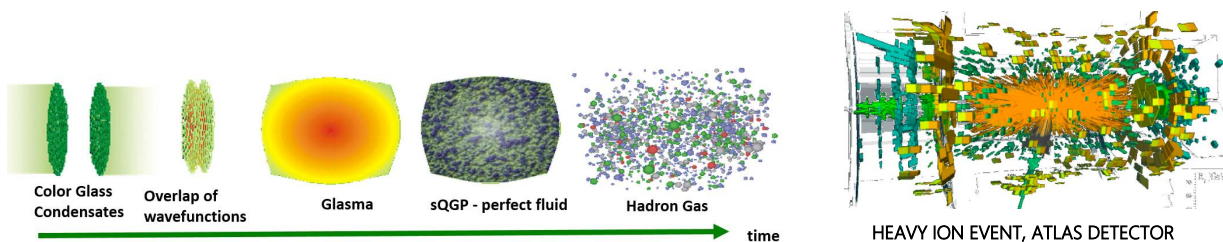
Kolloquium Physik / TransRegio211

Strong-Interaction Matter under Extreme Conditions

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Nuts to soup: QCD in the Regge limit, the Color Glass Condensate, and the approach to thermalization in heavy-ion collisions



It was proposed about 25 years ago that the Regge limit of QCD could be described by a many-body classical effective field theory now known as the Color Glass Condensate (CGC). This conjecture was prompted by the phenomenon of gluon saturation, whereby many-body gluodynamics leads to the emergence of a semi-hard scale that screens color charge in the infrared. In the first part of this talk, we will introduce the concepts of the CGC effective theory, emphasizing a paradigm shift in what constitutes fundamental degrees of freedom in the Regge limit. We shall also outline a color memory effect in the CGC which bears an exact analogy to the gravitational memory effect that could be discovered by LIGO in the near future. This correspondence in turn prompts one to speculate that asymptotic BMS-like symmetries analogous to those in gravity may also apply in QCD's Regge limit, leading to novel insight into how pions form "soft hair" on glue. In the second part of the talk, we discuss how the CGC provides an ab initio picture of thermalization and hydrodynamics in ultrarelativistic heavy-ion collisions. We focus on the discovery of a pre-thermal turbulent attractor, its topological properties, and a remarkable universality between this attractor and cold atomic gases prepared with the same boundary conditions.

Montag, 10.12.2018, 16:15 Uhr

Ort: Hörsaal 6