



PHYSIKALISCHES KOLLOQUIUM

des Fachbereichs Physik
der Johann Wolfgang Goethe-Universität Frankfurt

Mittwoch, den 06.02.2019, 16 Uhr c.t.
Großer Hörsaal, Raum _0.111,
Max-von-Laue-Str. 1



Prof. Dr. Wolfram Weise

TUM Emeritus of Excellence
Technische Universität München

"Phases of Strongly Interacting Matter - from Quarks to Nuclei and Neutron Stars -"

The strong interaction of quarks and gluons is at the origin of almost all of the mass of the visible universe. The emergence of multifaceted phases and structures, from quarks to hadrons, atomic nuclei and neutron stars, is one of the persistently challenging issues of modern science.

This colloquium reviews our current understanding of the phases of Quantum Chromodynamics (QCD). Empirical information from nuclear collisions at the highest available energies will be briefly surveyed together with results from Lattice QCD thermodynamics. It is pointed out that important constraints on the phase diagram arise from nuclear physics and the treatment of the nuclear many-body problem using effective field theory approaches based on the symmetry breaking pattern of low-energy QCD. The presentation includes a discussion of stringent constraints on the equation-of-state of dense baryonic matter implied by the existence of massive (two-solar-mass) neutron stars. This topic is presently in a special focus through the recent observation of gravitational waves from merging neutron stars.

Die Dozenten der Physik

local host: Prof. Dr. Dirk Rischke, drischke@th.physik.uni-frankfurt.de