RUHR-UNIVERSITÄT BOCHUM
FAKULTÄT FÜR PHYSIK UND ASTRONOMIE

RUB

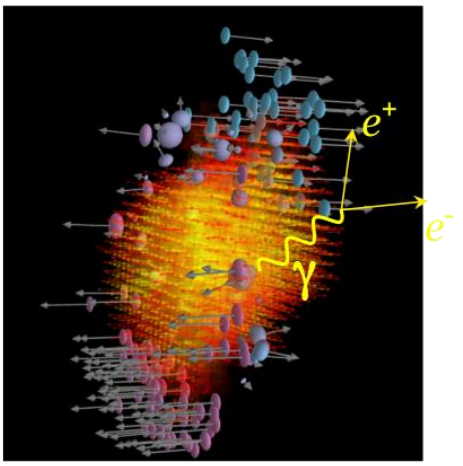
PHYSIKALISCHES KOLLOQUIUM

Wintersemester 2018/19

Montag, 29.10.2018, 12 Uhr c.t. **HZO 20**

Shine a light! When matter shatters.

Prof. Dr. Tetyana Galatyuk
Technische Universität Darmstadt



What happens when gold nuclei, accelerated to about 90% of the speed of light, strike gold nuclei at rest? For an extremely short time, t~10^{-23} seconds, states of matter at extreme temperatures (10^{12} K) and densities (>280 Mt/cm3) are produced. The possibility to form and explore in the laboratory strongly interacting matter under conditions similar to those realized a few microseconds after the "Big Bang", or still existing today in the interior of compact stellar objects is truly fascinating.

Virtual photons, the generalized form of electromagnetic radiation, materialize after short time by formation of a pair of charged leptons, e.g. an electron and a positron. Throughout the course of a heavy-ion collision such photons offer the unique opportunity to directly monitor "Roentgen-images" (in-medium electromagnetic spectral functions) and to measure "Planck-like-spectra" (temperature of the emitting source) of strongly interacting matter.

This talk will discuss important experimental results on emissivity of matter obtained so far at various facilities. A deeper understanding of the microscopic origin of the excess radiation requires systematic investigation of di-electron radiation emitted from baryonic resonances produced off protons in pion-induced reactions. These are studied in HADES at GSI making use of pion beams.

Einführung: Prof. Dr. U. Wiedner

Die Fakultät lädt alle Interessierten herzlich ein.