

Allgemeines Physikalisches Kolloquium

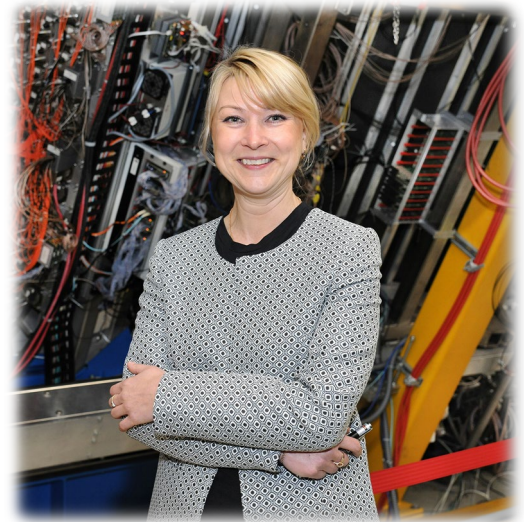
Donnerstag, 02.07.26 – 16 Uhr c.t.

IG1 – HS 2 | Wilhelm-Klemm-Str. 10

Kolloquiums-Kaffee ab 16 Uhr vor dem Hörsaal

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Shine a light! When matter shatters

What happens when gold nuclei accelerated to around 90% of the speed of light collide with gold nuclei at rest? For an extremely short time - around 10^{-23} seconds - states of matter at extreme temperatures (10^{12} K) and densities (> 280 Mt/cm³) are produced. The microscopic properties of strong-interaction matter under such extreme conditions are a topic of great current interest. Despite a difference of 18 orders of magnitude in system size and time, the conditions present in heavy-ion collisions overlap significantly with those of strong-interaction matter in neutron-star mergers. The possibility of forming and exploring strong-interaction matter under extreme conditions in the laboratory is truly fascinating.

The relativistic heavy-ion physics programme at GSI/FAIR has the potential to reveal the most significant features of the QCD phase diagram, which are expected to occur at high net baryon densities. Measuring a comprehensive set of diagnostic probes offers the possibility of finding signatures of exotic phases and discovering the conjectured first-order deconfinement phase transition and its critical endpoint. Particular emphasis is put on electromagnetic radiation. In this talk, I will begin with a broader introduction and discuss how the GSI/FAIR facility aims to explore cosmic forms of matter in the laboratory.