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# Physikalisches Kolloquium

Jan. 30, 2024 at 4:15 p.m.  
HS KPH

Prof. Silvia Masciocchi  
Heidelberg/GSI

## Hot QCD Matter Flowing as a Fluid

Very high energy densities are reached in ultra-relativistic collisions of heavy ions. Under these conditions, the confinement in strongly-interacting matter is lifted, and a quark-gluon plasma (QGP) is formed. At the highest temperatures realized in the laboratory, this system offers us the opportunity to study QCD matter under extreme conditions. The successful heavy-ion program at the LHC provides data of increasing precision. I will illustrate how experimental evidence supports the description of the QGP by fluid dynamics. This has been recently extended to include even rare and penetrating probes such as heavy quarks. Through this description and making use of neural networks and Bayesian inference, we are able to determine fundamental properties of QCD with increasing precision. A quick look into the formidable detectors with which we gain this evidence in the ALICE will complete the overview.

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