

Preisträgervortrag PV IX Mi 10:00 Plenarsaal
Decoding the QCD phase structure with relativistic nuclear collisions — •PETER BRAUN-MUNZINGER — GSI, Planckstr. 1, 64291 Darmstadt, Germany — Träger der Stern-Gerlach-Medaille

In this talk we demonstrate that the phase structure of strongly interacting matter can be decoded via analysis of particle production in high energy nuclear collisions. This is achieved by making use of the observed thermalization pattern of particle abundances within the framework of the statistical hadronization approach at various collision

energies. The thermalization holds not only for hadronic constituents composed of light quarks but also for light, loosely bound nuclei. The observed energy dependence of the production yields and fluctuations of different particle species contains characteristic features which are used to determine the temperature and baryo-chemical potential of the matter produced. The above observations imply quark-hadron duality at the QCD phase boundary and establish the first experimental delineation of the location of the phase change in strongly interacting matter. New experimental opportunities for relativistic nuclear collisions are pointed out for the near and longer term future.