

Hauptvortrag PV VI Di 11:45 RW 1
The QCD Phase Diagram: Results and Perspectives — ●JAN
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I review the progress made in recent years with functional continuum methods in our understanding of the QCD phase diagram and its application to heavy ion collisions and astrophysics. Within this approach QCD correlation functions of quarks, gluon and hadrons are computed non-perturbatively from first principles. The approach has been used complementary as well as in combination with lattice computations, a particular strength being its applicability to the chiral limit and at finite density. In the past decades this has led to a plethora of quanti-

tative as well as qualitative results for the hadronic mass spectrum, the confinement-deconfinement and the chiral phase transition, the role of fluctuations (non-Gaussianities) and the dynamics of QCD far from equilibrium.

In the present talk I will mainly concentrate on the phase structure of QCD at vanishing and finite temperature and density, including the effects of strong (chromo-) magnetic and electric fields such as present in heavy ion collisions. Specifically results are discussed for the order parameters of confinement-deconfinement and chiral phase transitions, the nature of these transitions and their interrelation, as well as the thermodynamics of QCD. The talk concludes with a discussion of the further prospects for our understanding of the phase structure of QCD.