Dissociation of hadrons in hot dense matter

Sunday 7 January 2018 14:00 (30 minutes)

A unified equation of state for quark-hadron matter is presented in the generalized Beth-Uhlenbeck form. It follows from a Φ−derivable approach to the thermodynamic potential where the ansatz for the Φ functional contains all 2PI diagrams at two-loop order formed with quark cluster Green's functions for quark, diquark, meson and baryon propagators. We present numerical results using an effective model for the generic behaviour of hadron masses and phase shifts at finite temperature which shares basic features with recent developments within the PNJL model for correlations in quark matter. We obtain the transition between a hadron resonance gas phase and the quark gluon plasma where the Mott dissociation of hadrons is encoded in the hadronic phase shifts. The resulting thermodynamics is in very good agreement with recent lattice QCD simulations.

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