Contribution ID : **146** Type : **plenary talk**

Generalized Beth–Uhlenbeck approach to mesons and diquarks in hot, dense quark matter

Monday, 2 June 2014 13:00 (0:30)

Collaboration

Abstract content

An important first step in the program of hadronization of chiral quark models is the bosonization in meson and diquark channels. This procedure is presented at finite temperatures and chemical potentials for the SU(2) flavor case of the NJL model. The thermodynamic potential is obtained in the gaussian approximation for the meson and diquark fields and it is given the Beth-Uhlenbeck form. This allows a detailed discussion of bound state dissociation in hot, dense matter (Mott effect) in terms of the in-medium scattering phase shift of two-particle correlations. It is shown for the case without meson-diquark mixing that the phase shift can be separated into a continuum and a resonance part. In the latter, the Mott transition manifests itself by a change of the phase shift at threshold by π in accordance with Levinson's theorem, when a bound state transforms to a resonance in the scattering continuum. The consequences for the contribution of pionic correlations to the pressure are discussed by evaluating the Beth-Uhlenbeck equation of state in different approximations. An outlook to the next step in the hadronization program is given: the introduction of baryons and "integrating out" the diquark fields.

Primary author(s) : BLASCHKE, David (University of Wrocław)

Co-author(s) : DUBININ, Aleksandr (University of Wrocław); BUBALLA, Michael (TU Darmstadt)

Presenter(s) : BLASCHKE, David (University of Wrocław)

Session Classification : Plenary Session