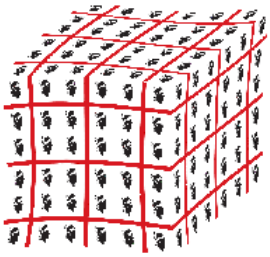

Contribution ID: **315** Type: **not specified**

QCD at finite chemical potential in the nilpotency expansion

Thursday, 17 June 2010 15:50 (20 minutes)

The nilpotency expansion is an approach to field theories based on time-dependent Bogoliubov transformations. When the theories are regularized on a lattice we perform independent Bogoliubov transformations at each time slice. The time-dependent parameters of the transformations can naturally be interpreted as bosonic fields associated to bosonic composites of fermions. They are caracterized by an index of nilpotency, which is the number of fermionic states in their structure functions.The original action is explicitly transformed in an exactly equivalent action expressed in terms of bosonic fields and fermionic fields with the quark quantum numbers (quasiparticles).

By making the parameters of the Bogoliubov transformations time-dependent we can conserve term by term several symmetries, in particular gauge invariance. We can then safely perform different approximations.

We construct a perturbative approach assuming the index of nilpotency as an asymptotic parameter and performing an asymptotic expansion in its inverse, the nilpotency expansion.

We have studied QCD in the saddle point approximation. We propose a new procedure to investigate the case of finite chemical potential. If we perform also an expansion in the gauge coupling constant we get results compatible with the standard ones.

Please, insert your presentation type (talk, poster)

talk

Primary authors: PALUMBO, Fabrizio (LNF); Prof. CARACCIOLO, sergio (Milano Univ.)

Presenter: PALUMBO, Fabrizio (LNF)

Session Classification: Parallel 39: Nonzero temperature and density

Track Classification: Nonzero temperature and density