



Contribution ID: 312

Type: Talk

Chiral dynamics in the low-temperature phase of QCD

Friday, 27 June 2014 16:50 (20 minutes)

We investigate the low-temperature phase of QCD and the crossover region with two light flavors of quarks. The chiral expansion around the point $(T, m_q = 0)$ in the temperature vs. quark-mass plane indicates that a sharp real-time excitation exists with the quantum numbers of the pion. We determine its dispersion relation and test the applicability of the chiral expansion. The time-dependent correlators are also analyzed using the Maximum Entropy Method (MEM), yielding consistent results. Finally, we test the predictions of ordinary chiral perturbation theory around the point $(T = 0, m_q = 0)$ for the temperature dependence of static observables. Around the crossover temperature, we find that all quantities considered depend only mildly on the quark mass in the considered range $8\text{MeV} \leq \overline{m}^{\overline{\text{MS}}} \leq 15\text{MeV}$.

Primary author: Mr ROBAINA, DANIEL (Institute of Nuclear Physics. Johannes Gutenberg University Mainz)

Co-authors: Dr FRANCIS, ANTHONY (Johannes Gutenberg University); Dr BRANDT, BASTIAN B. (University Regensburg); Prof. MEYER, HARVEY B. (Institute of Nuclear Physics. Johannes Gutenberg University)

Presenter: Mr ROBAINA, DANIEL (Institute of Nuclear Physics. Johannes Gutenberg University Mainz)

Session Classification: Nonzero temperature and Density

Track Classification: Nonzero Temperature and Density