Contribution ID: **174** Type: **Oral**

The fate of chiral symmetry in the quark-gluon plasma

Wednesday 21 August 2024 15:00 (30 minutes)

I present a new way of understanding how chiral symmetry is realized in the high temperature phase of QCD. I show that a simple instanton-based random matrix model provides an excellent description of the lowest part of the spectrum of the lattice overlap Dirac operator. Even though dynamical quarks introduce instanton-antiinstanton interactions, the lowest part of the spectrum, dominating physical quantities related to chiral symmetry, can be understood in terms of a non-interacting instanton gas that turns out to generate a spectral density singular at the origin. Besides providing an intuitive physical picture of how light quarks interact with gluons at high temperature, the model also has nontrivial quantitative predictions. In particular, by generalizing the Banks-Casher formula for the singular spectral density, I show a possible resolution of the long-standing debate about the fate of the anomalous U(1)_A symmetry above the critical temperature.

Author: KOVACS, Tamas G.

Presenter: KOVACS, Tamas G.

Session Classification: Section A Focus Subsection

Track Classification: A*: VSC Focus Subsection