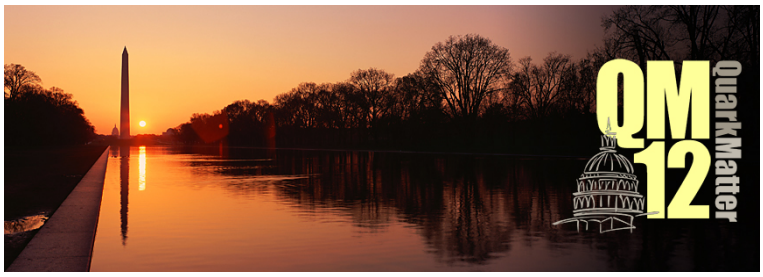

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The QCD Equation of State with 2+1 flavors of Highly Improved Staggered Quarks

Thursday 16 August 2012 15:40 (20 minutes)

The physics of the Quark-Gluon Plasma (QGP), currently explored experimentally in heavy-ion collisions, is non-perturbative for temperatures below approximately 1 GeV. One of the fundamental properties of the QGP, the Equation of State, is a subject of extensive studies in lattice QCD. The lattice QCD Equation of State is now an essential requirement for the correct hydrodynamic modeling of heavy-ion collisions. Lattice QCD provides first-principle calculations with physical results recovered in the continuum limit. Thus, understanding of the discretization effects is of great importance. I report on recent progress by the HotQCD collaboration in studying the 2+1 flavor Equation of State on lattices with the temporal extent Nt=6, 8, 10 and 12 in Highly Improved Staggered Quarks (HISQ) discretization scheme. In the low-temperature phase, where the Hadron Resonance Gas (HRG) model is expected to be a good approximation, a comparison of HRG and lattice results is also presented. Comparisons with Equation of State calculations with different fermion actions will also be discussed.

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