



Contribution ID: 374

Type: Oral Presentation

Heavy quark potential at non-zero temperature and quarkonium spectral functions

Tuesday, August 14, 2012 2:55 PM (20 minutes)

We calculate different types of Wilson loops of temporal size $t < 1/T$ at non-zero temperatures on the lattice using Highly Improved Staggered Quark (HISQ) action and temporal extent $Nt=8$ and 12 . Unlike other static correlators which go around the periodic boundary these Wilson loops are not related to the free energy of static quark anti-quark pair. Therefore from the analysis of the Wilson loop we extract the real part of the heavy quark potential. We find that the extracted potential is systematically larger than the singlet free energy calculated on the lattice. At $T > 200 \text{ MeV}$ we supplement the calculated real part of the potential with the imaginary part obtained in perturbation theory and evaluate the quarkonium spectral functions. We find that all quarkonium states except the Upsilon(1S) melt at temperatures $T > 300 \text{ MeV}$. Finally from the obtained spectral functions we calculate the Euclidean correlation functions and compare them with available lattice data.

Primary author: PETRECZKY, Peter (BNL)

Co-author: Dr BAZAVOV, Alexei (BNL)

Presenter: PETRECZKY, Peter (BNL)

Session Classification: Parallel 1D: Heavy Flavor & Quarkonia (Chair R. Granier de Cassagnac)