

# Towards a high statistics analysis of quarkonium at $T>0$ using NRQCD on realistic $N_f=2+1$ HISQ lattices

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Lattice QCD has the potential to provide urgently needed first principles insight into the binding properties of heavy quarkonium in-medium, which form a central pillar of the experimental investigations of the quark-gluon plasma at the RHIC and LHC collider facilities.

Here we report on progress in our ongoing work to deploy the effective field theory NRQCD on current generation dynamical QCD lattices with  $N_f=2+1$  light HISQ flavors at  $T>0$ , in order to ultimately extract the in-medium spectral properties of  $b\bar{b}$  and  $c\bar{c}$  bound states around the phase transition and in the QGP regime.

In addition to previously published results on Bottomonium [1], we have investigated both correlator and spectral properties of Charmonium states [2] which showed a clear ordering of their in-medium modification, also among different flavors, according to the vacuum binding energy. Both computations are currently being extended [3] to higher temperatures, preliminary results of which are presented on this poster.

[1] S.Kim, P.Petreczky, A.R. Phys.Rev. D91 (2015) 054511<br>

[2] S.Kim, P.Petreczky, A.R. arXiv:1511.04151, arXiv:1512.05289<br>

[3] S.Kim, P.Petreczky, A.R. in preparation

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