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Exploring the anisotropic HISQ (aHISQ) action

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The fate of heavy quarkonia states in quark-gluon plasma is encoded in the temperature dependence of their spectral functions. Reconstruction of spectral functions from Euclidean lattice correlators is an ill-posed problem. Despite a variety of techniques developed recently, many questions remain unresolved. It is known that the situation may be improved using anisotropic ensembles that provide finer resolution in the temporal direction. To date, the effort focused on Wilson fermions. We report on our first study with anisotropic improved staggered quarks. To compute the spectrum of the anisotropic Highly Improved Staggered Quarks (aHISQ) we generated a library of anisotropic pure gauge ensembles. We discuss the gauge anisotropy tuning that is performed with the Symanzik gradient flow, as well as tuning of the strange quark mass and quark anisotropy with aHISQ, using spectrum measurements on quenched ensembles. Finally, we discuss the impact of anisotropy on pion taste splittings for aHISQ.

Topical area

Hadronic and Nuclear Spectrum and Interactions

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