

Improved staggered eigenvalues and epsilon regime universality in SU(2).

Presenter: Alistair Hart (University of Edinburgh)

E. Follana, A. Hart, C.T.H. Davies

Abstract: We study the low-lying modes of staggered Dirac operators for quenched SU(2), and show that improvement changes the distribution from lattice-like to continuum-like at lattice spacings representative of current dynamical SU(3) simulations.

Epsilon regime universality predicts different distributions for the low-lying eigenvalues of the continuum and lattice staggered Dirac operators. At lattice spacings around 0.07fm we show that improved staggered eigenvalues have the continuum distribution (as predicted by the chiral orthogonal ensemble in random matrix theory), whilst unimproved fall on the discrete distribution (as per the chiral symplectic ensemble in RMT). We explain this qualitatively improved behaviour in terms of dual epsilon regimes, and compare with the situation in SU(3).