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# Generalized HMC using Nambu mechanics

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I describe a generalization of the Hybrid Monte Carlo (HMC) algorithm with molecular dynamics (MD) steps which use Nambu's generalized Hamiltonian dynamics. Characterized by multiple Hamiltonian functions, this formalism allows me to include forces from non-local objects in the MD evolution while still preserving the target probability distribution. In this way, the local changes proposed by the MD have instantaneous knowledge of the long-distance behavior of the gauge field. This represents a promising method for fighting critical slowing down in lattice QCD simulations. Results will be presented for a few choices of the second non-local auxiliary Hamiltonian.

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