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Applying the Worldvolume Hybrid Monte Carlo method to dynamical fermion systems

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The sign problem has been a major obstacle to first-principles calculations in various important physical systems. The Worldvolume Hybrid Monte Carlo (WV-HMC) method [Fukuma-Matsumoto 2020] may be a promising method towards solving the sign problem due to its versatility, reliability and low numerical cost. In this talk, I would like to report recent results on the application of the WV-HMC method to dynamical fermion systems. The emphasis will be on the Hubbard model, which is one of the simplest dynamical fermion systems that have the sign problem.

Topical area

QCD at Non-zero Density

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