

Abstract Submitted  
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**Spin-Orbit interactions in auxiliary field diffusion Monte Carlo**

JIE ZHANG, KEVIN SCHMIDT, Arizona State University — Nuclear Matter and light nuclei have been successfully calculated using the Auxiliary field diffusion Monte Carlo method and a truncated two-body potential without spin-orbit interactions, the Argonne v6' potential. In order to have realistic calculations where the remaining parts of the interaction can be treated perturbatively, the Argonne v8' potential is commonly sampled in Monte Carlo methods. Here we will show that by using a pair-wise break up of the Hamiltonian, along with additional auxiliary fields, that the additional spin-orbit and isospin dependent spin-orbit terms can be sampled. We will discuss calculations of the nuclear matter equation of state using this method. This work was support by NSF grant PHY-1067777.

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