

Abstract Submitted
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In-Medium Similarity Renormalization Group for Finite Nuclei HEIKO HERGERT, Ohio State University — The Similarity Renormalization Group (SRG) has emerged as a powerful and versatile tool for many-body physics. So far, its primary application in the framework of the nuclear many-body problem is the derivation of effective interactions from underlying realistic NN (and recently 3N) interactions. A recent development is the In-Medium SRG, where the Hamiltonian is evolved directly in the A-body system (i.e., at finite density). By a suitable choice of generator the ground state is decoupled from particle-hole excitations, and the IMSRG can be considered an Ab Initio technique for solving the many-body problem. The computational effort is comparable to Coupled Cluster approaches, which makes calculations for medium-mass and heavy nuclei feasible. I will give a brief overview of the method, present results for closed-shell nuclei with NN and 3N interactions, and discuss an effort to generalize the IM-SRG formalism for arbitrary reference states, with the aim of extending our calculations to open-shell nuclei. **References:** K. Tsukiyama, S. Bogner, and A. Schwenk, Phys. Rev. Lett. 106, 222502 (2011) S. Bogner, R. Furnstahl, and A. Schwenk, Prog. Part. Nucl. Phys. 65, 94 (2010)

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