Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Orbital entanglement in ab-initio self-consistent calculations of light nuclei[1] CAROLINE ROBIN, MARTIN SAVAGE, Institute for Nuclear Theory, University of Washington, NATHALIE PILLET, CEA,DAM,DIF — The many-body approach known as Multiconfiguration Self-Consistent Field method has been used for decades in atomic physics and quantum chemistry. In this approach, both the expansion coefficients of the many-body state and the underlying single-particle basis are determined simultaneously via a variational principle. In the past, we have adapted this method to the description of atomic nuclei, and recently have implemented two-body interactions derived from chiral effective theory, opening the way to ab-initio self-consistent calculations of nuclei. In this talk we present properties of ground and excited states of light nuclei obtained within this framework. The quality of the single-particle basis is investigated in terms of entanglement between single-nucleon states. In particular, we explore relations between the convergence of observables and entanglement features.

[1]This work was supported by US-DOE Grant DE-FG02-00ER41132 and US-NSF Grant PHY-1430152.

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Date submitted: 26 Jun 2020 Electronic form version 1.4