

Abstract Submitted  
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**Spin-dependent nonlocal translational invariant one-body densities from No-Core Shell Model** GABRIELA POPA, M. BURROWS, CH. ELSTER, Ohio University, K. LAUNEY, Louisiana State University, P. MARIS, Iowa State University, S. P. WEPPNER, Eckerd College, A. NOGGA, Institut für Kernphysik — Translationally invariant nonlocal densities are needed in reaction calculations. Though it is standard to extract translationally invariant local one-body densities from the no-core shell model (NCSM) to calculate local nuclear observables like radii and transition amplitudes, the corresponding nonlocal one-body densities have raised several challenges. We developed the formalism to calculate these densities in position and momentum space using NCSM matrix elements. The removal of the center-of-mass contribution from nonlocal one-body densities obtained from NCSM calculations was derived and applied to the ground state densities of  ${}^4\text{He}$ ,  ${}^6\text{Li}$ ,  ${}^{12}\text{C}$ , and  ${}^{16}\text{O}$ . Recent results of spin-dependent non-local translational invariant one-body densities from NCSM based on the  $\text{NN2LO}_{\text{opt}}$  interaction will be presented for  ${}^6\text{He}$ .

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