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Reduced Density Matrix Mechanics with Neutron Drops[1]
ALEXANDER DYHDALO, RICHARD FURNSTAHL, Ohio State Univ - Columbus — Despite impressive strides made in the last few decades, solving the quantum many-body problem for nuclear systems remains a challenge. We propose adopting a novel many-body method developed in quantum chemistry over the past few decades and applying it to nuclear systems. This method, termed reduced density matrix mechanics, utilizes properties of the one- and two-body density matrices and semidefinite programming to solve the many-body system. Here, we apply this method to a system of neutron drops interacting via the semi-realistic Minnesota potential.

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