

Abstract Submitted
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***Ab initio* multi-irrep symplectic no-core configuration interaction calculations**¹ A.E. MCCOY, M.A. CAPRIO, University of Notre Dame, T. DYTRYCH, Louisiana State University — The $Sp(3, R)$ symplectic symmetry has a close physical connection to both the microscopic shell model and the collective deformation and rotational degrees of freedom. In addition, recent $SU(3)$ -coupled no-core shell model [$SU(3)$ -NCSM] calculations indicate that rotational nuclei have an approximate symplectic symmetry. *Ab Initio* multi-irrep symplectic no-core configuration interaction (NCCI) calculations combine the traditional symplectic model with the $SU(3)$ -NCSM to extend the range of NCCI calculations beyond the p -shell nuclei. Moreover, carrying out calculations in a symplectic basis provides a natural framework in which to study the emerging rotational behavior observed in NCCI calculations. We present key elements of this framework and initial calculations.

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