

Abstract Submitted  
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**Angular momentum projection in coupled-cluster theory** GAUTE HAGEN, Oak Ridge National Laboratory, ZHONGHAO SUN, University of Tennessee, SAM NOVARIO, Los Alamos National Laboratory, THOMAS PAPENBROCK, University of Tennessee, THOMAS DUGUET, CEA, ALEXANDER TICHAI, Technical University of Darmstadt — Atomic nuclei have good spin, parity, and third component of the isospin. Yet for many nuclei, symmetry unrestricted mean-field calculations find it advantageous to break rotational invariance and particle number conservation such that the vacuum states accurately reflect the emergent symmetry breaking of intrinsically deformed and superfluid nuclei, respectively. Starting from such symmetry-breaking mean-field states in nuclear structure computations has the advantage that less effort needs to be spent in including correlations beyond the mean field; the disadvantage consists in the need to perform symmetry projections. In this talk I will present the first implementation and application of symmetry restoration in axially deformed coupled-cluster calculations. I will show results for the prototypical deformed nuclei 8-Be and 20-Ne and compare with data and other existing calculations.

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