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Sp(3,R) decomposition of the SU(3) no-core shell model basis[1]
FENGQIAO LUO, MARK A. CAPRIO, University of Notre Dame, TOMAS DYTRYCH, Louisiana State University — Numerical evidence shows an important role of the symplectic Sp(3,R) symmetry in the ab initio no-core shell model results for light nuclei. Therefore, the construction of symplectic states from SU(3) states is necessary, as a prerequisite and crucial step of understanding the symplectic symmetry for those nuclei. This presentation will provide an introduction to our numerical calculation that decomposes the basis states of Sp(3,R) irreducible representations in terms of SU(3) nuclear basis. We use the null space of the Sp(3,R) generator $B^{(02)}$ to find the extremal states, and then ladder them with the generator $A^{(20)}$ to build the entire irreps.

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