

Abstract Submitted
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Overlaps of Deformed and Non-Deformed Basis States for Large-scale Shell-model Calculations¹ DAVID KEKEJIAN, JERRY DRAAYER, THOMAS DYTRYCH, KRISTINA LAUNEY, Louisiana State University — We provide a systematic approach for expanding non-deformed harmonic oscillator basis states in terms of deformed ones, namely we present analytical results for calculating these overlaps, transformation brackets between deformed and non-deformed basis states in cylindrical, spherical and Cartesian coordinates. The overarching objective is to integrate these results into shell-model codes to reduce the dimensionality of model spaces. This, in turn, will allow one to probe more deeply into the structure of nuclei and to provide ab initio or microscopic descriptions of medium-mass and heavy nuclei, short cutting a need to await the development of evermore robust computational resources for carrying out advanced microscopic nuclear structure calculations.

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