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SU(3)-guided Realistic Nucleon-nucleon Interaction for Large-scale Calculations[1] GRIGOR SARGSYAN, KRISTINA LAUNEY, ROBERT BAKER, Louisiana State University, TOMAS DYTRYCH, Nuclear Physics Institute, 250 68 Rez, Czech Republic, JERRY DRAAYER, Louisiana State University — We examine nucleon-nucleon (NN) realistic interactions, such as JISP16 and N3LO, based on their SU(3) decomposition and identify components of the interactions that are sufficient to describe the structure of low-lying states in nuclei. We observe that many of the interaction components, when expressed as SU(3) tensors, become negligible. Paring the interaction down to its physically relevant terms improves the efficacy of large-scale calculations from first principles (*ab initio*). The work compares spectral properties for low-lying states in ^{12}C calculated by means of the selected interaction to the results obtained when the full interaction is used and confirms the validity of the method.

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