CENS: A computational environment for nuclear structure
MORTEN HJORTH-JENSEN, GUSTAV R. JANSEN, Department of Physics, University of Oslo, Norway — We present a recently developed software written in Python which merges several Fortran95 and C++ codes for doing 'ab initio' nuclear structure calculations. Combined with a pedagogical graphical user interface, the software allows the user to perform nuclear structure calculations starting from the free nucleon-nucleon interaction, and via various renormalization techniques one obtains an effective interaction for shell-model calculations. The included shell-model code allow the user to compute spectra and transition probabilities for practically all mass areas. Several methods for renormalizing a nucleon-nucleon interaction and taylor it to specific model spaces are available, ranging from no-core shell-model interaction to interactions derived from many-body perturbation theory.

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