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Title: Octupole Deformations of Ground State Nuclei

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When calculating binding energies of nuclei in their ground states, reflection-symmetry breaking deformations are often ignored due to computational complications. In this work, by solving the Hartree-Fock-Bogoliubov equations with a Skyrme energy density functional and using quadrupole and octupole constraints, binding energies for all even-even nuclei across the mass table have been predicted. Nuclei with reflection asymmetric shapes in their ground states were identified. They were used in further calculations of mass filters such as separation energies (for one and two neutrons and for one and two protons) and the double-difference indicator ΔV_{pn} . The mass filters were then graphed and compared to one another to see whether they carry information on the octupole effects.