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O16 in relativistic Brueckner-Hartree-Fock theory

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We study the properties of O^{16} in relativistic Brueckner-Hartree-Fock equations with realistic nucleon-nucleon interaction. No additional approximation is used and no parameters are needed to calculate the ground state properties of finite nuclei. The whole system is solved in Harmonics oscillator basis. The resulting ground state properties, such as binding energies and charge radii of O^{16}, are largely improved as compared with non-relativistic Brueckner-Hartree-Fock results and more close to the experimental data. It becomes feasible to use this framework also for ab initio investigations of heavy nuclei.

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