Theoretical description of exotic nuclei

Jacek Dobaczewski
Institute of Theoretical Physics, Warsaw University

Single-particle properties of nuclei are key elements of theoretical description in nuclear structure. They define the nuclear shells and influence most of the global and local ground-state observables as well as those of excited states. Since the nucleus is a strongly correlated system, single-particle states should be defined within a given theoretical framework and understood as characteristics of the whole nucleus. In the talk I will present properties of single-particle states calculated within the self-consistent theory with a particular emphasis on their relation to changes of nuclear shell structure in exotic nuclei. I will also discuss modifications of nuclear shells caused by tensor interactions and tensor terms in the energy density functionals.