Abstract Submitted
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Odd-even Mass Nuclei in Nuclear Energy Density Functional theory NICOLAS SCHUNCK, Univ. of Tennessee, JACEK DOBACZEWSKI, University of Warsaw, Poland, MARIO STOITSOV, WITOLD NAZAREWICZ, Univ. of Tennessee — Energy Density Functional (EDF) theory provides a global and consistent framework to describe nuclear structure. Almost all of the current parametrizations of the EDF were obtained by starting from an effective two-body interaction, e.g. of the Skyrme type, and only experimental observables relative to even nuclei were taken into account in the fit of the parameters of the interaction. This implies that, although the EDF is constructed out of both time-even and time-odd fields, the latter have not been really probed during the fitting procedure. A consequence of this bias is that spectroscopic properties of atomic nuclei are rather poorly described in self-consistent EDF approaches. Efficient EDF solvers together with super-computing facilities allow us to change this strategy and probe the time-odd fields in a more systematic way. The talk will briefly review the formalism of the energy density functional theory and present the first results of systematic self-consistent HFB blocking calculations in the rare-earth region. Effects coming from the interaction, from the presence of tensor terms and of time-odd fields will be presented and the consequence on the fit of new generations of functionals discussed.

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