



Contribution ID: 65

Type: **not specified**

Nuclear charge radius predictions with Fayans EDF

Tuesday, December 10, 2024 12:05 PM (25 minutes)

The nuclear charge radius can provide information about the nuclear interactions and the nuclear structure. While global trend of the charge radii is guided by the nuclear bulk properties, its local variation is affected by various nuclear structure effects. Due to recent advances in experimental techniques, new high-precision data on charge radii on various isotopic chains allows testing nuclear structure models more thoroughly. I will discuss the predictions of the nuclear charge radii on various isotopic chains with DFT-based models, concentrating in particular on results obtained with the Fayans EDF. Presently used Fayans EDF parametrizations were adjusted with a focus on nuclear charge radii. Recent measurements in K, Ag, and Pd isotopic chains have shown that while DFT-based models can predict overall trends well, there are, nevertheless, some deficiencies. Typically, Fayans EDF seems to reproduce the experimental trend better than Skyrme EDF models, however, the magnitude of the odd-even staggering of the radii is often overestimated. In addition, I will also discuss the similar pattern of differential charge radii in even-even isotopic chains from Ca to Zn with DFT and ab-initio-based nuclear structure models, and octupole deformation properties of Fayans EDF in the Actinide region.

Presenter: Prof. KORTELAJNEN, Markus (University of Jyväskylä)

Session Classification: Nuclear interaction