

Radial moments of charge density distributions in stable and unstable nuclei

Wednesday, 8 March 2023 14:05 (5 minutes)

Nuclear charge radius is one of the most fundamental quantities in describing the structure of a nucleus. So far, the elastic electron scattering experiments have provided information on the charge distribution of stable and quasi-stable nuclei. Now, there are new methods available to measure the charge radius in unstable nuclei of shorter life times. Furthermore, precision in the isotope shift measurements has been significantly improved.

In this study, we aim to explore the second-order (and higher-order) moments of the charge distribution in nuclei, especially for calcium isotopes, using the energy density functional method. We investigate correlations among nucleons in comparison with recent experimental data, and try to identify microscopic mechanisms which contribute to properties of the charge distribution.

Experimental study on nuclear physics

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Session Classification: Short presentation for the poster contribution