**Ab initio study of radii and Coulomb shifts of six-nucleon isobar analogue states**

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The problem of describing the size parameters (matter, charge, neutron radii) of nuclei attracts a wide range of researchers. The size parameters of exotic nuclei have the greatest physical significance.

In the theoretical studies of light nuclei significant role is occupied by ab initio (from first principles) methods of describing nuclear systems. An important place among such methods is taken by different versions of No-Core Shell Model (NCSM) [1]. Two different NN-potentials are exploited in the calculations, the first of which was obtained from the chiral effective field theory [2], and the second one – from nucleon-nucleon scattering data using the *J*-matrix inverse scattering method [3]. Both of these potentials are universal, they have been tested in calculations of binding energies, spectra, and other characteristics of nuclei.

In the current work material, charge, and neutron radii as well as Coulomb shifts of isobar analogue states of six-nucleon systems are computed and compared. These values and rate of their convergences with the grows of used basis size allow one to obtain some information about the properties of nuclear matter in the peripheral region of weakly coupled nuclear systems.

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