New uranium isotope discovered at SHANS and CAFE2 project in Lanzhou

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Finding new isotopes and extending the landscape of the chart of nuclei are always exciting in nuclear physics. In my talk, I will give a report on the discovery of the most neutron-deficient uranium isotope ^{214}U and the more precise α-decay measurement of the even-even nuclei ^{216,218}U. The experiments were performed at the gas-filled recoil separator, SHANS, in Lanzhou. Based on these measurements, we found that the strong proton-neutron interaction may affect the formation of α particle in this region of nuclei and enhance the α-particle clustering in lightest uranium isotopes.

In order to study superheavy elements with improved experimental condition, we are carrying out a new project, CAFE2 (China Accelerator Facility for superheavy Elements), which contains an ECR ion source, an upgraded super-conducting linear accelerator and a new gas-filled recoil separator, SHANS2. I will briefly show the present status, progress, and plans for this project.