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## **Structure of extremely neutron-rich 9,10He**

Thursday, 27 June 2024 14:20 (20 minutes)

Nuclear resonant states far from the stability line provide a stringent test of nuclear forces at extreme isospin asymmetry. In this talk, I will report on the low-lying resonant states of extremely neutron-rich <sup>9</sup>He and <sup>10</sup>He populated via the (p, 2p) reaction from the 2n-halo nucleus <sup>11</sup>Li at ~250 MeV/nucleon. The obtained <sup>9</sup>He spectrum shows a clear peak at 1.2 MeV with a width of ~ 1 MeV, which is probably a p-wave resonance. The resonance parameters play a key role to understand the <sup>8</sup>He-neutron interactions. The <sup>10</sup>He spectrum was obtained from the three-body invariant mass of <sup>8</sup>He+2n, with much higher statistics than previous measurements [1,2]. The spectrum was compared to the theoretical calculation that combines the coupled-channel three-body model of 11Li [3] and the quasi-free knockout (p, 2p) reaction model [4,5]. Two low-lying 0<sup>+</sup> resonant states of <sup>10</sup>He were identified at ~ 1 MeV and at ~2 MeV, which have a [s<sub>1/2</sub> s<sub>1/2</sub>]0<sup>+</sup> configuration and a [p<sub>1/2</sub> p<sub>1/2</sub>]0<sup>+</sup> configuration, respectively.

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[5] Y. Kubota et al., Phys. Rev. Lett. 125, 252501 (2020).

## Collaboration

SAMURAI018

Primary author: Dr SUN, Yelei (Beihang University)

Presenter: Dr SUN, Yelei (Beihang University)

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