Contribution ID: **75** Type: **Presentation**

Effect of sequential process on neutron-knockout reaction of 6He

Tuesday, 1 July 2014 11:25 (25 minutes)

Two-neutron halo nuclei have exotic structure in their ground states.
Theoretically, their structure and binding mechanisms have been studied based on the core+n+n three-body model.
From the three-body model calculation, the dineutron correlation, which is characterized as the spatially-correlated neutron pair, has been suggested in the ground states.

In this work, we investigate the dineutron in two-neutron halo nuclei using the neutron-knockout reaction of 6He.
We consider the neutron knockout from 6He with high momentum transfer, and discuss the possibility of direct measurement of dineutron in the ground state.
In the reaction, the knocked-out neutron with high momentum transfer can be free from the final-state interaction, and hence, is expected to reflect the ground-state structure.
However, due to the Borromean nature of 6He, the residual nucleus 5He decays with neutron emission.
The emitted neutron mainly comes from the 5He(3/2-) resonance in the final state, and this sequential process might mask the ground-state information.

In this contribution, we investigate the effect of the sequential process on the neutron-knockout reaction of 6He.
We here calculate the angular correlation between the emitted neutrons, and discuss how to extract the information on the dineutron correlation from the observables.

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Session Classification: Session 3

Track Classification: Prefer Presentation