Contribution ID: **35** Type: **Invited**

Dineutron correlation in neutron drip-line nuclei

Tuesday, 7 November 2023 14:30 (25 minutes)

The dineutron is a hypothetical bound state of two neutrons in a nuclear medium and a spatially compact pair, different from the one realized by the BCS mechanism[1].The dineutron correlation is expected to appear in various circumstances, such as the surface of weakly bound neutron-rich systems and the inner crust of neutron stars. It has been studied using various approaches, such as the breakup reactions[2,3]. However, previous measurements were insufficient to discuss the magnitude of the dineutron correlation and its density dependence due to the sensitivity of the probe[4].
In the present study, it is found for the first time that the dineutron in the ^{11}Li nucleus is localized on the surface of the ^{11}Li nucleus. The use of the quasi-free (p, pn) reaction was essential to extract the radial information of the dineutron and to minimize the effect of the final state interactions[5]. The published results [6] and recent updates will be presented.

References

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Primary author: KUBOTA, Yuki (RIKEN Nishina Center)

Presenter: KUBOTA, Yuki (RIKEN Nishina Center)

Session Classification: Day 2 - Afternoon