



国立研究開発法人理化学研究所 仁科加速器科学研究センター
第298回 RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 298th RIBF Nuclear Physics Seminar

Study the role of the valence proton in $^{23,25}\text{F}$
using the $(p,2p)$ quasi-free knockout reaction

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A large difference of the neutron dripline between oxygen and fluorine suggests that the $0d_{5/2}$ proton changed the neutron shell structure in fluorine. The quasi-free $^{23,25}\text{F}(p,2p)$ direct knockout reactions in inverse kinematics was used to study the role of the proton. The valence proton in $^{23,25}\text{F}$ should be a single-particle due to the $Z=9$ magicity and sub-closed neutron shell. When the proton is removed from the $^{23,25}\text{F}$, the neutron shell structure will project to oxygen excited states, and from that, the neutron shell structure can be inferred. We will talk about the experimental setup, the data analysis, and the results. The occupation number of the $0d_{5/2}$ proton of ^{25}F was 1.0 ± 0.3 , which is consistent with a single-particle state. However, the spectroscopic strength of the $0d_{5/2}$ proton was fragmented, particularly, the ground-state strength is weak. This indicates that the neutron-shell structures between $^{23,25}\text{F}$ and $^{22,24}\text{O}$ are different. The experiment was condensed to Physical Review Letters 124, 212502 (2020).

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via Zoom meeting system

* The talk will be given in English language.

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