

RIBF ULIC Symposium/Mini-WS Report

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Workshop reference number	RIBF-ULIC Mini-WS041
Title	Structure of neutron-rich matter revealed by beta decay
Date	29–30 July 2024
Venue	Nishina Hall
Language	English
Workshop website	https://indico2.riken.jp/event/4850/
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Summary of discussions and its (expected) results

The latest results of theoretical calculations and experiments were presented. The nuclear beta decay together with the delayed neutron emission probability play a central role in understanding the r-process nucleosynthesis. Theoretically, the statistical model is usually employed to describe the neutron(s) emission, although the mechanism of the compound-nucleus formation is not still well understood. To obtain some insight, a possible study of the gamma emission followed by the charge-exchange reaction for stable nuclei was discussed. Furthermore, the precise determination of the energy of emitted neutrons provides us with the beta-strength distribution, and this can be used as a test of the theoretical model. A detailed study of the forbidden transitions in heavy nuclei particularly beyond the $N=126$ magic number is also needed to understand the r-process.

The beta decay and the neutron emission are a spectroscopic tool to investigate the structure of neutron-rich nuclei. New data were presented, and the evolution of the shell structure and nuclear shapes was discussed. The shape transition and shape coexistence were suggested, which stimulates further theoretical calculations.

We concluded that it would be nice to continue to have this kind of informal meeting, where we can exchange some preliminary results and unmaturing ideas among theorists and experimentalists.