



国立研究開発法人理化学研究所 仁科加速器研究センター
第252回 RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 252nd RIBF Nuclear Physics Seminar

Hypernuclear spectroscopy with heavy ion beams:
past, present and future

Prof. Takehiko SAITO
(GSI, Germany)

Studies of hypernuclei, subatomic nuclei with strangeness, provide the information on the fundamental hadronic interactions under the flavored-SU(3) symmetry and the inside of the subatomic nuclei with a hyperon as a probe. Hypernuclei have conventionally been studied by secondary meson-beams and primary electron-beams as well as by using cosmic-rays. We have started a new experimental hypernuclear project with heavy ion beams and RI-beams bombarding a fixed nuclear target. The proposed technique can open opportunities to study hypernuclei at extreme isospin as well as with multi-strangeness. A direct measurement of hypernuclear magnetic moments can be feasible only by the proposed technique. A pioneering experiment, the HypHI Phase 0, was performed at GSI in 2009, and it has revealed unanticipated observations including the short lifetime of the hypertriton and an indication of a possible Λ - n - n bound state. The project has been extended with the WASA central detector and FRS at FAIR Phase 0 (GSI), and a newly proposed experiment will be performed in 2019. The project will be continued at FAIR Phase 0, which has been stated as one of day-one experiments of NuSTAR at FAIR. Furthermore, a brand new hypernuclear project with heavy ion beams at High Intensity heavy ion Accelerator Facility, HIAF, which is under construction in China, has been started and in preparation for experiments starting in 2024. In the seminar, the past, present and future of the hypernuclear experiments with heavy ion beams will be discussed.

* The talk will be given in English language.

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Contact: Nuclear Physics Seminar Organizing Committee
npsoc@ribf.riken.jp
<http://ribf.riken.jp/~seminar/>