



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  
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RIKEN Nishina Center for Accelerator Based Science  
The 239th RIBF Nuclear Physics Seminar

Evolution of nuclear structure and collectivity in the rare-earth region

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One of the most successful descriptions of the structure of atomic nuclei is the spherical shell model. It, however, becomes impractical when moving away from closed-shell nuclei. Instead, it is the interplay between the macroscopic shape degrees of freedom and the microscopic nature of the underlying single-particle structure in a deformed basis that determines the nuclear structure. In particular the area of the nuclear chart between the  $50 < Z < 82$  and  $82 < N < 126$  shells is the largest region below lead with a well-developed quadrupole collectivity. In the simplified picture all the typical observables of collectivity are expected to change smoothly here. However, the presence of potential sub-shell closures, high angular momentum Nilsson orbitals and higher-order deformations changes this simple picture. In this seminar I will discuss some experimental results performed in this region both in Europe and Japan, as well as provide an outlook of open questions to be studied in the near future.

\* The talk will be given in English language..

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