つくば不安定核セミナー

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講師：渡邉　寛

所属：北京航空航天大学

日時：２０１７年7月２６日(水)　16:00 ~

場所：筑波大学　総合研究B棟1階　B112講義室

講演題目

希土類中性子過剰核の崩壊特性と低エネルギー励起準位構造

Decay properties and low-energy excitations in neutron-rich rare-earth nuclei

概要

Rare-earth (RE) isotopes in the vicinity of the double mid-shell at Z = 66 and N = 104 are exemplary cases of well-deformed nuclei in which the energy levels are characterized by collective rotations and surface vibrations, as well as by quasi-particle excitations. The presence of these excitation modes within a narrow range of energy causes interplay among them to a greater or lesser extent, giving rise to a rich variety of structural aspects in deformed nuclei. Besides their importance for nuclear structure study, the decay and deformation properties of neutron-rich RE isotopes are suggested to play a crucial role in the formation of the so-called RE-element peak around A = 165 in the r-process solar abundance distribution.

Despite such a broad range of interest, spectroscopic information still remains scarce due to the experimental difficulties in producing neutron-rich nuclei around and beyond the double mid-shell. The advent of the third-generation in-flight fragment separator facility, the RI-Beam Factory (RIBF) at RIKEN, enables access to this exotic area and allows for systematic studies of their decay properties [1]. In this seminar, I will present the results of β-decay half-lives [2] and β-γ/isomeric-decay spectroscopy [3] of neutron-rich RE isotopes obtained as part of the EURICA (EUROBALL-RIKEN Cluster Array) project at RIBF, along with a discussion about their impact on nuclear structure and nuclear astrophysics.

[1] T. Nakamura, H. Sakurai, and H. Watanabe, Prog. Part. Nucl. Phys. (in press).
[2] J. Wu et al., Phys. Rev. Lett. 118, 072701 (2017).
[3] H. Watanabe et al., Phys. Lett. B 760, 641 (2016).

* The presentation file is written in English, but the talk will be given in Japanese.
* セミナーに先立って、崩壊核分光法による核構造研究についての講義を行います。
  7月２６日、13:00 - 14:00, 14:30-15:30。場所はセミナー会場です。対象は学部・修士以上。
* 会場は次の URL でご確認ください。http://www.tsukuba.ac.jp/access/map_central.html
* 車でのご来場の場合は、入構手続き、駐車場など次の URL を参照してください。http://www.t-anzen.org/

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