



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311回 RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 311th RIBF Nuclear Physics Seminar
Co-organized with RIBF Theory Forum

What can we learn from nuclear density profiles?

Prof. Wataru Horiuchi (Osaka Metropolitan University)

Density distributions tell us various information on the structure of an atomic nucleus. In this talk, I will discuss how the nuclear structure is reflected in the density profiles by showing some examples selected from our recent works. Various density profiles are examined by direct comparison to reaction observables. Contents include the following topics:

- (1) “Core swelling phenomena [1] “
are found to be universal and can be understood by investigating the density profiles in both the internal and surface densities [2,3].
- (2) “Nuclear deformation”
exhibits characteristic density profiles near the nuclear surface [4].
Some examples in the island of inversion near $N=40$ [5] will be presented.
- (3) “Shell or cluster configurations?”
If time allows, I will discuss the possibility of extracting the degree of nuclear clustering from the analysis of the density profiles [6].

References

- [1] M. Tanaka et al., Phys. Rev. Lett. 124, 102501 (2020).
- [2] W. Horiuchi and T. Inakura, Phys. Rev. C 101, 061301(R) (2020).
- [3] W. Horiuchi and T. Inakura, Phys. Rev. C 105, 044303 (2022).
- [4] W. Horiuchi and T. Inakura, Prog. Theor. Exp. Phys. 2021, 103D02 (2021).
- [5] W. Horiuchi, T. Inakura, and S. Michimasa, Phys. Rev. C 105, 014316 (2022).
- [6] W. Horiuchi and N. Itagaki, arXiv: 2210.05172.

Nov. 7th (Mon), 2022 13:30 ~
via Hybrid (Zoom + RIBF Hall)



* The talk will be given in English language.

Contact: Nuclear Physics Seminar Organizing Committee

npsoc@ribf.riken.jp

<http://ribf.riken.jp/~seminar/>