ID de la contribución : **915** Tipo : **no especificado**

New experimental measurements for Ba to Nd nuclei (A∼160) for r-process rare-earth nucleosynthesis

miércoles, 20 de noviembre de 2024 9:00 (15)

The r-process, also known as the rapid neutron capture process, plays a crucial role in the formation of more than half of the elements that are heavier than iron. To shed light on this process, the BRIKEN collaboration [1] has conducted extensive measurements of the β-decay properties of important nuclei at the Radioactive Isotope Beam Factory (RIBF) located at the RIKEN Nishina Center in Japan. During the freeze-out phase at the end of neutron exposure, a distinctive feature called the Rare-Earth Peak (REP) emerges in the solar abundance distribution around mass number A=160. This study focuses on the region from Ba to Nd, which is essential for understanding REP nucleosynthesis in the r-process, as indicated by sensitivity studies [2, 3]. In this work, we present the final results from the BRIKEN-REP experiment, which include newly determined branching ratios for $T_{1/2}$ and P_{1n}. Additionally, we offer new theoretical nuclear structure calculations to enhance our understanding of the r-process.

[1] J.L. Tain et. al , Acta Physica Polonica B 49(03), 417 — 428 (2018). \newline
[2] M. R. Mumpower et al , Phys. Rev. C 85, 045801 (2012).
[3] A. Arcones and G. Martinez Pinedo , Phys. Rev. C 83, 045809 (2011).

Abstract

Primary author(s) : PALLÀS SOLÍS, Max (Universitat Politècnica de Catalunya (UPC))

Co-author(s) : TARIFEÑO-SALDIVIA, Ariel (Instituto de Fisica Corpuscular (CSIC-UV)); MARTÍNEZ PINEDO, Gabriel (GSI and TU Darmstadt); TAIN, Jose L. (Instituto de Fisica Corpuscular); ALVEAR TERRERO, Diana (Institut für Kernphysik (Theoriezentrum), Fachbereich Physik, Technische Universität Darmstadt); TOLOSA-DELGADO, Alvaro (CERN); CALVINO, Francisco (Universitat Politecnica de Catalunya); Dr. KISS, Gabor (HUN-REN Institute for Nuclear Research (ATOMKI))

Presenter(s) : PALLÀS SOLÍS, Max (Universitat Politècnica de Catalunya (UPC))

Clasificación de la sesión : Red FNUC (Red Temática de Física Nuclear)

Clasificación de temáticas : Red Temática de Física Nuclear (FNUC)