

## Analysis of Energy Uncertainties Generated from Density of Emulsion Layer and Range Straggling

*Tuesday, 28 June 2022 16:14 (1 minute)*

Measurement of density of emulsion layer is very important for analyzing double strangeness hypernuclei. Because the mass of double hypernucleus is reconstructed by measuring the kinetic energy which is converted from the range of decay daughter nuclei in nuclear emulsion plate using range-energy relation. Alpha tracks from thorium and uranium series, which have monochromatic energy, were used to calibrate density of emulsion layers for the last five decades. However, the relation between the number of alpha tracks and the error of mass reconstruction have not been sufficiently studied because of time-intensive method to search alpha decay events in the emulsion plate. Recently, scanning system for alpha decay events have been developed by applying the convolutional neural network. Nowadays, we are able to investigate several hundred number of alpha tracks in a reasonable time by the developed method. In this study, around 1500 alpha tracks from three emulsion plates were used to estimate between density of emulsion layer with the dependence of number of alpha tracks and the corresponding energy error. In addition, we will introduce the difference of kinetic energy error generated from the error of density of emulsion layer and range straggling.

**Primary author:** Ms LIN, Phyo Myat (Graduate School of Engineering, Gifu University, Japan)

**Co-authors:** Dr NYAW, Aung Nay Lin (Graduate School of Education, Gifu University, Japan); Mr KASAGI, Ayumi (1. Graduate School of Engineering, Gifu University, 2. High Energy Nuclear Physics Laboratory, Cluster for Pioneering Research, RIKEN, Japan); Dr YOSHIDA, Junya (1. Department of Physics, Tohoku University, 2. High Energy Nuclear Physics Laboratory, Cluster for Pioneering Research, RIKEN, Japan); Prof. NAKAZAWA, Kazuma (Graduate School of Education, Gifu University, Japan); Dr YOSHIMOTO, Masahiro (RIKEN Nishina Center for Accelerator-Based Science, RIKEN, Japan); Mr NAOKI, Nishimura (Graduate School of Education, Gifu University, Japan)

**Presenter:** Ms LIN, Phyo Myat (Graduate School of Engineering, Gifu University, Japan)

**Session Classification:** 6; Poster session