Contribution ID: **24** Type: **Talk**

# Bayesian approach to fission products yields of 235U by data augmentation

*Monday, 28 August 2023 16:20 (30 minutes)*

Fission yield is an important physical quantity for nuclear systems and the origin of heavy elements. In recent years, the energy dependence of fission yield has attracted particular attention. In this presentation, we present our first results for fission products yields (FPY) predicted by Bayesian neural network (BNN) model.

In the BNN model, we divided the FPY data in the JENDL-5.0 library into 80% for training data and 20% for validation. To enhance the accuracy of predictions of FPY data by BNN model, we discussed data augmentation by integrating 80% of JENDL-5 FPY data, cumulative fission yields (CFY) data from experiments, and theoretical calculation results as a whole set of training data. Finally, we show the Bayesian estimation of 235U(n,f) FPY data in the induced-energy range (0.5 MeV ~ 14 MeV) with data augmentation. The prediction results from BNN model with data augmentation reproduce the fine structure of the heavy fission product peaks.

**Primary author:** Dr CHEN, Jingde (Tokyo Institute of Technology)

**Co-authors:** Dr MUKOBARA, Yuta (Tokyo Institute of Technology); Dr ISHIZUKA, Chikako (Tokyo Institute of Technology); Prof. KATABUCHI, Tatsuya (Tokyo Institute of Technology); Prof. CHIBA, Satoshi (Tokyo Institute of Technology)

**Presenter:** Dr CHEN, Jingde (Tokyo Institute of Technology)

**Session Classification:** Heavy Nuclei