Contribution ID: **62** Type: **not specified**

[P04] The optical potential for neutron-nucleus scattering derived by Bayesian optimization

Thursday, 18 November 2021 16:00 (2h 30m)

We are working on a combination of nuclear reaction calculation code CCONE and machine learning libraries to generate and improve the accuracy of nuclear data. In this presentation, we will show an example of optimizing the parameters of the optical potential to reproduce elastic and inelastic scatterings of neutron-54Fe. The elastic scatterings and inelastic scatterings to the first excited state at several incident energies were calculated using CCONE, and the optical parameters were optimized to reproduce the experimental data by Bayesian optimization. The optimized parameters are the depth of the real and imaginary parts of the central force potential, its energy dependence, radius, and diffuseness parameter. Using the obtained optical potential, we estimated the cross sections at energies different from the input, and found that the calculations reproduced the experiments well. In this presentation, we will introduce these calculation examples and also discuss the future prospects.

Primary author: Mr WATANABE, Shoto (Hokkaido-Univ)

Co-authors: MINATO, Futoshi (JAEA); KIMURA, Masaaki (Hokkaido-Univ); IWAMOTO, Nobuyuki (JAEA)

Presenter: Mr WATANABE, Shoto (Hokkaido-Univ)

Session Classification: Poster ポスター