

Improvement of dynamical model considering neutron emission effect during fission process/核分裂過程での中性子放出効果を考慮した動力学モデルの改良

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The experiments at JAEA have produced a wide variety of nuclei and various excited states through multi-nucleon transfer reactions and successfully observed their fission [1]. The fission fragment mass distributions (FFMDs) obtained in this experiment show a mass asymmetry even in the high excitation energy region. This phenomenon can be explained by multi-chance fission (MCF). In a previous study [2], the neutron emission multiplicity was obtained by the GEF code [3] and then the fission process was calculated by the dynamical model method to incorporate the MCF effect and reproduce the experimental data of FFMDs with high accuracy. However, the above method does not take into account neutron emission during the fission process. Therefore, our group has been developing a model that can describe neutron emission in the fission process by incorporating the neutron evaporation process in the dynamical model [4]. In fact, FFMD calculations can be performed taking into account the decrease in excitation energy due to neutron emission and the accompanying change in the shell correction energy. In this study, we have further improved the model so that it can also take into account variation in the liquid drop model potential due to neutron emission, and we report the results.

References

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