

Microscopic description of deuteron-induced inclusive reactions and its implications to nuclear data evaluation/包括的重陽子入射反応の微視的記述 と核データ評価への展開

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Previous studies have revealed the importance of introducing surface correction into a phenomenological model for inclusive (n, xn) and (p, xp) reactions [1]. These findings have contributed significantly to the improvement of nuclear data evaluation. However, the necessity for the surface correction in an inclusive (d, xd) reaction has hardly been investigated.

The purpose of this study is to investigate the difference in the peripherality of the (p, xp) and (d, xd) reactions by a theoretical analysis using a quantum mechanical model, and to obtain a theoretical basis on the (d, xd) reaction. The energy spectra and their radial distributions for the (p, xp) and (d, xd) reactions are calculated by the one-step semiclassical distorted wave model (SCDW) [2-4]. In this presentation, we will explain the description of the (d, xd) reaction with the SCDW and discuss the effect of the difference in the peripherality of the (p, xp) and (d, xd) reactions on a phenomenological model for nuclear data evaluation.

References

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