

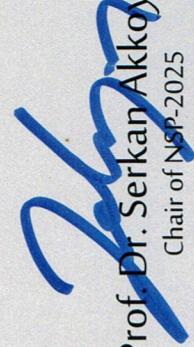


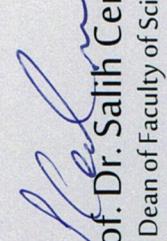
SİVAS CUMHURİYET ÜNİVERSİTESİ
XVII. INTERNATIONAL CONFERENCE ON NUCLEAR STRUCTURE PROPERTIES
NSP-2025

Certificate of Appreciation

Ghezal Asma

has participated as a speaker at 17th International Conference on Nuclear Structure Properties – NSP2025 organized by Sivas Cumhuriyet University, Sivas Türkiye on 25 – 27 June, 2025.


Prof. Dr. Serkan Alkoyun
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Improved semi-empirical formula for (n, ^3He) reaction cross section at 14.6 MeV

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Abstract

A new semi-empirical formula has been developed to calculate the (n, ^3He) reaction cross-section at a neutron energy of 14.6 MeV, with the aim of improving prediction accuracy by incorporating the Q-value and asymmetry parameters. The formula is based on the exciton model, which describes the pre-equilibrium reaction mechanism. Experimental data from the literature were used to validate the formula and optimize its free parameters. The results show that the proposed formula provides a better fit to experimental data compared to previous models, especially at incident energies above 15 MeV. The model has also been extended to cover a wider energy range and validated using additional experimental data.

Keywords — (n,t) function excitaion;; fusion reaction; ^3He reaction emission.