

Model Calculation of $n+{}^6\text{Li}$ Reactions Below 20 MeV

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Abstract: Based on the unified Hauser-Feshbach and exciton model for light nuclei, the calculations of reaction cross sections and the double-differential cross sections for $n+{}^6\text{Li}$ are performed. Since all of the first-particle emissions are from the compound nucleus to the discrete levels, the angular momentum coupling effect in pre-equilibrium mechanism must be taken into account. The fitting of the measured data indicates that the three-body break-up process needs to be involved, and the pre-equilibrium reaction mechanism dominates the reaction processes. In light nucleus reactions the recoil effect must be taken into account.

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Key words: pre-equilibrium emission, discrete levels, three-body break-up process

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