

Proton-Induced α -Particle Emission on ^{90}Zr at 72 MeV Incident Energy

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The pre-equilibrium proton induced emission of light complex nuclei with energies in the continuum has been studied comprehensively for many years. Double-differential cross sections and especially analyzing power distributions are typical of an intranuclear nucleon-nucleon multistep statistical reaction mechanism. The final stage of the reaction may be a result of a direct pickup or knockout of the ejectile. The discussion on this subject continues to be a hot topic for theoretical and experimental investigations.

In this talk results from the latest studies of the inclusive (\vec{p}, α) reaction at 72 MeV incident energy on ^{90}Zr to the continuum will be reported. A formalism based on the statistical multistep direct emission formulation of Feshbach, Kerman and Koonin is found to give a reasonably good reproduction of cross section and analyzing power distributions at various emission energies.

The aim of the present investigation is to complete the systematic on the dependence of the reaction mechanism on the incident energy.