ELASTIC SCATTERING OF DEUTERONS BY TRITONS

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S u m m a r y

Differential cross-sections of elastic scattering of deuterons with the energy $E_d = 37.0$ MeV by tritons have been measured in the range of scattering angles $25° \leq \theta_{\text{c.m.}} \leq 150°$. The angular distributions at elastic scattering of deuterons by tritons (helions) at energies of 14–40 MeV have been analyzed in the framework of a microscopic diffraction nuclear model and taking NN interactions into account. This allowed the angular distributions of deuterons near the main maximum ($\theta_{\text{c.m.}} \leq 60°$) at $E_d = 14.4$, 37.0, and 39.9 MeV to be described satisfactorily. An explanation for the origin of a broad secondary maximum that appears at low energies of incident deuterons is proposed. The corresponding calculations have been carried out to prove that it appears due to the interference between quantum and classical amplitudes of isotropic scattering and as a manifestation of the structure of colliding nuclei. The characteristic features that emerge in the angular dependence of the *dt* scattering cross-sections in the interval $60° \leq \theta_{\text{c.m.}} \leq 130°$, when the energy increases from 6 to 40 MeV, has been explained only qualitatively, using the phenomenological quasiclassical approximation. The energy spectra of deuterons and recoil tritons in the T(dd)T reaction at $E_d = 37.0$ MeV have been analyzed.