

ELASTIC AND INELASTIC SCATTERING OF ^{18}O IONS ON ^{12}C NUCLEI

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Angular distributions of the $^{12}\text{C} + ^{18}\text{O}$ elastic and inelastic scattering were measured at the energy $E_{\text{lab}}(^{18}\text{O}) = 105$ MeV ($E_{\text{c.m.}} = 42$ MeV). These data and data known from the literature at the energies $E_{\text{c.m.}} = 12.9 - 56$ MeV were analysed within the optical model and coupled-reaction-channels method. The sets of the Woods-Saxon ($^{12}\text{C} + ^{18}\text{O}$)-potential parameters were deduced and their energy dependence was studied. It was found the isotopic differences in the ($^{12}\text{C} + ^{16}\text{O}$)- and ($^{12}\text{C} + ^{18}\text{O}$)-potentials parameters and in their surface forms. The mechanisms of elastic and inelastic ($^{12}\text{C} + ^{18}\text{O}$)-scattering and role of transfer reactions were studied.

Keywords: nuclear reactions, optical model, coupled-reaction-channels method, folding-model, spectroscopic amplitudes, optical potentials, reaction mechanisms.