

Radiative Reactions Analysis at the Range of Astrophysical Energies

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Abstract : Analysis of the elastic scattering of protons on ^{10}B nuclei has been done in the framework of the optical model and single folding model at the beam energies up to 17 MeV. We could enhance the optical potential parameters using Esis88 Code, as well as SPI GENOA Code. Linear relationship between volume real potential (V_0) and proton energy (E_p) has been obtained. Also, surface imaginary potential W_D is proportional to the proton energy (E_p) in the range 0.400 and 17 MeV. The radiative reaction $^{10}\text{B}(p,\gamma)^{11}\text{C}$ has been analyzed using potential model. A comparison between $^{10}\text{B}(p,\gamma)^{11}\text{C}$ and $^6\text{Li}(p,\gamma)^7\text{Be}$ has been made. Good agreement has been found between theoretical and experimental results in the whole range of energy. The radiative resonance reaction $^7\text{Li}(p,\gamma)^8\text{Be}$ has been studied.

Keywords : elastic scattering of protons on ^{10}B nuclei, optical potential parameters, potential model, radiative reaction

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