

Reaction cross section of heavy projectiles using Coulomb Modified Glauber Model

To understand particle productions mechanism in the inelastic collisions of various projectiles at low and high energies, the Glauber model has been used for a long time. In the present work, we have calculated the total reaction cross section of heavy projectiles using Coulomb modified Glauber model (CMGM) considering with and without nuclear medium effects. We have considered heavy projectiles such as $^{56}\text{Fe}26$, $^{84}\text{Kr}36$, $^{132}\text{Xe}54$, $^{197}\text{Au}79$ and $^{238}\text{U}92$ interactions with nuclear emulsion detector's nuclei at incident energies around 1 GeV/n. The reaction cross sections with different target groups of nuclear emulsion detector have also been calculated. The obtained average values of the reaction cross sections are compared with corresponding experimental values. Through this systematic study, we observed that the calculated average values of reaction cross section with nuclear medium effects shows good agreements with projectiles $^{56}\text{Fe}26$, $^{84}\text{Kr}36$, $^{132}\text{Xe}54$, and projectiles $^{197}\text{Au}79$ and $^{238}\text{U}92$ shows discrepancies with their cross section. The calculated values of pion and kaon particles from this reaction cross section are shown good agreement with their experimental data.

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