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Laser assist scattering with thermal electron in elliptical and circular polarized laser field

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The objective of this research work is to design and develop laser-assisted thermal electron and hydrogen scattering, using theoretical model for elliptical and circular polarized laser. To develop the model, Volkov wave function for thermal case in elliptical and circular polarized laser field was designed and designed wave function is used to obtain S-matrix using Kroll-Watson approximation and born first approximation, with the help of S-matrix, T-matrix was obtained to study the DCS for elliptical and circular polarized laser. The obtained T-matrix was used to compute nature of DCS for linear and elliptical polarized laser field using MATLAB with computing parameters value for laser photon energy (1 eV to 3 eV), incidence thermal electron energy (0.511 MeV to 4 MeV) and temperature (280 K to 300 K). The DCS nature found decrease with increasing in incidence energy of thermal electron with constructive and distractive interference as well as superposition also take palce. In addition, the DCS with thermal electron found higher than non-thermal electron in presence of laser field with scattering angle and incidence energy of the electron.

Footnotes

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