Collisions of e± with oxygen isonuclear series: A relativistic calculation

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Employing Dirac's relativistic partial wave analysis, we report here the scattering of leptons (e±) from the oxygen isonuclear series over the energy range 1 eV ≤ E_i ≤ 1 MeV. A complex optical model potential is used to describe the scattering of the projectiles from the neutral oxygen atoms. For the ionic series, the long-range Coulomb potential is also incorporated. Various scattering observables namely, the differential, integrated elastic, viscosity, momentum-transfer, inelastic, grand total (elastic + inelastic), total ionization cross section and spin polarization parameters (S, T and U) are calculated over the aforementioned energy range. In addition, the effect of Coulomb glory is also reported throughout the oxygen ionic series. It is observed that our predictions are in a reasonable agreement with the available theoretical findings and experimental data.