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New Kinetic Effects in Spatial Distribution of Electron Flux and Excitation Rates in Glow Discharge Plasmas in Middle and High Pressures

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Abstract : Physical formation mechanisms of differential electron fluxes is high pressure positive column gas discharge are discussed. It is shown that the spatial differential fluxes of the electrons are directed both inward and outward depending on the energy relaxation law. In some cases the direction of energy differential flux at intermediate energies (5-10eV) in whole volume, except region near the wall, appeared to be down directed, so electron in this region dissipate more energy than gain from axial electric field. Paradoxical behaviour of electron flux in spatial-energy space is presented.

Keywords : plasma kinetics, electron distribution function, excitation and radiation rates, local and nonlocal EDF
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