Calculation of electron transport data in noble gases SERGEY
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— The features of the energy distribution function of electrons drifting in a rare gas
are analyzed. The case of electron drift in He, Ne, Ar, Kr and Xe is considered. The
results of calculation of the energy balance of electrons and drift characteristics in
an electric field at strengths of $0.1 < E/N < 1000$ Td taking into account inelastic
collisions are presented. We consider the model of electron-atom collisions, which
makes it possible to properly consider the energy balance of electrons, including
of inelastic collisions. Based on a numerical experiment, characteristics of electron
velocity distribution function and energy characteristics of electron drift in the dc
electric field were tabulated. The drift velocities, average electron energies, characteristic Townsend energies, average electron energies resulting in atom excitation
and ionization events, the ratio of elastic and inelastic energy loss, and the ionization
Townsend coefficient were calculated. Moreover, electron diffusion along and across
the electric field was considered and the dependence of diffusivities on the diffusion
time was obtained. The presented data can be used to analyze experiments with
dusty plasma.

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