

Abstract Submitted
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Expression of a momentum-transfer scattering at an inelastic collision on electron transport in a collisional plasma TOSHIAKI MAKABE, Keio University — An expression for the inelastic momentum-transfer scattering on the collision integral of the Boltzmann equation is derived in order to reflect the effect of the inelastic collision of an electron with a molecule on the electron kinetics in gases and collisional plasmas. To our knowledge, this is the first attempt to formulate the effect of the momentum-transfer scattering of an inelastic collision. The present procedure is a traditional one in which the Boltzmann equation of electrons is expanded by the Spherical-harmonics in velocity space. It is shown that the effect of the inelastic momentum-transfer on the electron transport is expressed only when we consider the first anisotropic part of the velocity distribution in the expanded Boltzmann equation. In addition, case studies are performed by considering the dependence of the scattering angle and the magnitude distribution. The influence of the inelastic momentum-transfer scattering on the electron transport should be further investigated, particularly in the case of a Ramsauer gas having the relation $Q_{vib}(v) > Q_m(v)$ in the vicinity of the Ramsauer-minimum in SiH_4 , CH_4 , and CF_4 etc.

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