FISSION FRAGMENTS AND ENERGY SPECTRA OF PRIMARY ELECTRONS IN A FISSIONING PLASMA

Shapiyeva A. Ye.,[*1] ***Kunakov S.K.,***[2] ***Son E. Ye.***[1,3]

[1]*MIPT, Dolgoprudny, Russia,* [2]*KazNU, Almaty, Kazakhstan,* [3]*JIHT RAS, Moscow, Russia*

[*]*shapieva.ae@gmail.com*

Since the appearance of outstanding in its importance theory of non–uniform gases [1], sufficient number publications are released. Most of them are focused to adjust Boltzmann kinetic equation in different fields of applications. One of the most cited is [2], in which the high frequency gas discharges are studied for slightly ionized plasma within which the following limited conditions exist. The major this work [2] is devoted to the development of methods for calculating the energy distributions in a gas of low ion density under the influence of a high frequency a. c. field. The assumption that initial and final velocities are very close to each other leads to sufficient number of limitations in use for definite applications. Incident electrons interact with atoms not in the way like sphere with some rigid objects, but as with a complex system of charged particles moving in the state of dynamical equilibrium and actually interact initially with cycling electrons moving on the upper orbits. What is the source of primary electrons, this is very important problem also was not discussed and identified. The identification of fast electrons with energy around Mev's region (runaway electron) is not discussed or presented as well as the fact that where the radiation (bremsstrahlung) starts and ends, and how the formation of X–rays should be included in kinetic equation [3]. The X–rays [4] also might be treated like electrons (the de Broglie wave length) and the next coming question is that whether or not the absorption of X–ray by electrons leads to rise its kinetic energy lifting them to the MeV level, where usually neutrino oscillations connected with presence the beta electrons are existing. Boltzmann kinetic equations governing energy spectra of fast particles in nuclear induced plasma are defined and presented in detailed form for continuous plasma interacting with neutrons. Primary electrons spectra analytical expressions were derived on the bases of monochromatic energy spectra of helium–3 isotope fission products. The expressions for primary electrons born from tritium nuclei are also obtained in numerical and analytical way the proposed system of kinetic equation solution. The primary electrons in their own turn may also cause ionization processes. The energy distribution for the primary electrons, created by fast electrons born from protons and tritium nucleuses are defined and compared with Monte–Carlo statistical approach.

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