SIMULATIONS OF ELECTRON MOTION IN RADIO-FREQUENCY CAPACITIVE DISCHARGE

Chebakova V.Ju.

Kazan Federal University, 18 Kremlevskaya Street, 420008, Kazan, Russia

The paper presents the Monte-Carlo method for modeling the kinetics of electrons in an alternating field of a radio frequency capacitive coupled discharge. When constructing the algorithm, we consider the motion of an electron as a discrete random process, that is, the trajectory of motion is divided into separate sections, the characteristics of motion of which do not change. The length of these sections depends on the time of the collisionless movement, which is carried out randomly. Between these sites, an electron participates in a collision process, the type of which is played out using a geometric probabilistic scheme. When using this scheme, themeasure of the space of all elementary outcomes is estimated as the sum of the maximum measures of elementary outcomes, while we believe that the measure of the collision process is wound to its frequency. Since the collision frequencies depend on the electron velocity, which is not constant, then the measures of elementary outcomes also change at each end of the motion segment and the type of "empty"collisions is introduced to preserve the unchanged measure of the space of all elementary outcomes. The frequency of the process of "empty"collisions complements the sum of the frequencies of the processes of collisions to the total frequency corresponding to the measure of the space of elementary outcomes. The results of solving model problems are presented. The obtained regularities correspond to the general concepts of the dependence of the motion of electrons in an electric field at different pressures. This allows us to make a conclusion about the correctness of the developed algorithm for describing the motion of electrons