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## Simulations of electron avalanches in the GEM detector

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Studies of Gas Electron Multiplier (GEM) detector are conducted at the IPPLM institute for several years. They aim to develop GEM detector to register the soft X-ray in tokamak experimental conditions. This paper presents the results of simulations of electron avalanches produced within the tested detector due to absorption of X-ray photon. In first step simulations involved the construction of spatial model of fragment (cell) of the GEM detector, and then computing the electric field distribution maps from the applied voltage. Comparative simulations were performed in a commercial ANSYS Maxwell and free software packages Gmsh/Elmer. These programs can compute approximate electric fields in nearly arbitrary three-dimensional configurations with dielectrics and conductors. In second step calculations were continued in Garfield ++ program. It aims at simulations of the electron signal (avalanche) in GEM detector. The results obtained in the program Gmsh/Elmer are input to Garfield ++. The paper presents comparative results obtained for different values of high voltages applied to the electrodes and different values of primary electron energy.

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