

ANALYSIS OF INTER-ELECTRODE GAP STRUCTURE ON THE GENERATION OF PSEUDOSPARK SOURCED ELECTRON BEAM

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In recent time, Pseudospark (PS) discharge concept has been utilized for switching application and millimeter-wave generation [1-3]. PS discharge operates in the left hand side of the Paschen's curve [2]. PS discharge leads to form the plasma inside the hollow cathode cavity where plasma acts as copious source of electrons [1]. The plasma formation inside the hollow cathode cavity depends upon various geometrical design parameters like aperture size & shape, number of gaps, inter-electrode gap structure, etc. In the present work, analysis of inter-electrode gap structure on the generation of PS sourced electron beam has been performed. Simulation study has been performed for single gap and multi gap structures at different radial-gap as well as axial distances. The number of gaps has been varied between 1 to 8 for different applied gap voltages ranging between 20 kV-40 kV. The simulation studies have been carried out for optimization of number of gap and inter-electrode radial separation for energetic and high current density electron beam generation.

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