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**Studies on spatial structures of plasma localization under various external magnetic field and geometry parameters in capacitively coupled neutral loop discharges** MURAT VURAL, FATIH SIRIN, RALF PETER BRINKMANN, Theoretical Electrical Engineering, Ruhr-Universität-Bochum, D-44780 Bochum, Germany — The neutral loop discharge (NLD) is an RF driven low pressure discharge with three magnetic coils placed coaxially outside the vacuum chamber, generating an axissymmetric magnetic field that vanishes at the so-called magnetic neutral loop (NL). In a capacitively coupled neutral loop discharge (CCP-NLD), the accelerating electrical field is generated by applying an RF potential to external electrodes; the corresponding electric field lines are co-planar to the magnetic field lines but perpendicular to the NL. The reactor chamber has the form of a regular cylinder of different radii and constant height. This paper studies the impact on the electron density and electron energy of variations in the reactor dimensions and external magnetic field parameters in a CCP-NLD by means of spatially resolved particle-in-cell/Monte Carlo simulations. The influence of the reactor geometry and neutral gas pressures between 0.5 Pa and 10 Pa on the homogenity and heating mechanism are also shown.

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