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**The role of nonlocal electron energy transport in the formation of spatial distributions of the two-chamber plasma density of ICP discharge at change of gas pressure** ANATOLY KUDRYAVTSEV, KONSTANTIN SERDITOV, St. Petersburg State University — 2D simulations of the two-chamber ICP source where power is supplied in the small discharge chamber and extends by electron thermal conductivity mechanism to the big diffusion chamber is performed. Depending on pressure two main scenarios of plasma density and its spatial distribution behavior were identified. The first case of higher pressure is characterized by localization of plasma in small driver chamber where power is deposed and corresponds to small thermal conductivity length compared with diffusion length. The second case of lower pressure represents diffusion chamber as a main source of plasma with maximum of electron density with greater thermal conductivity length compared with diffusion length. The differences in spatial distribution are caused by local or non-local behavior of energy transport in discharge volume due to the different characteristic scale of heat transfer with electronic conductivity. As a result changing of geometrics and gas pressure gives the possibility to set ratio between diffusion and thermal conductivity characteristic lengths. Thus, one can control heat input and, in turn, obtain several types of plasma profiles.

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