RADIOPHYSICAL METHODS OF MODELING THE ELECTROMAGNETIC WAVES PROPAGATION THROUGH A FLAT PLASMA LAYER

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This paper presents the model variants of plasma layer creating by microwave discharges and plasma jet sources. Methods of creation a model quasi-dynamic plasma antenna on the basis of plasma jet and antenna type plasma structures of microwave range are also considered.

Pulsed discharge in a capillary with ablative wall can be used as a method of creating plasma antenna. A microwave discharge is another perspective method for plasma antennas creation in centimeter-decimeter wavelengths range that allows us to apply this approach for modeling different types of plasma antennas (dipole, traveling wave antenna, spiral antenna, and others).

Numerical modeling was initiated to analyze the interaction of microwave radiation with plasma layer. It is assumed that 2D consideration will allow investigating the influence of various types of regular spatial plasma structures on the characteristics of the transmission and scattering of EM waves beams. The model allows to investigate also the development of MW plasma structures (it is virtually impossible to implement in the framework of 3D modeling).