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Development of the millimeter wavelength accelerating structure

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We present the work on development of the millimeter wavelength accelerating structure. It consists of cylindrical cavities with the operating frequency of 96 GHz. The structure will be excited by the picosecond electron beam from the photocathode RF gun. In order to define exact both structure and exciting beam parameters, analytical estimations and simulations of the structure excitation were performed. We also studied in detail transverse dynamics of the exciting beam being of great importance because of the small structure inner aperture. For the successful propagation of the exciting beam through it, focusing system is needed, with its preliminary design being discussed. Prototype of the millimeter wavelength structure has been manufactured, its measurements are presented.

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