

# The results of investigation into the influence of plasma on electron beam parameters

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RNFC-VNIITF put the facility based on the linear induction accelerator (LIA) into operation in order to study dynamically developing objects due to explosive loading in the framework of pulse x-ray radiography method. One of the fundamental advantages of the LIA is the high-quality electron beam and small size focal spot. High energy release in the LIA target resulting from electron beam deceleration leads to formation of plasma torch that propagates towards accelerated electrons. This process has a negative effect on characteristics of the second and subsequent pulses in the multi-pulse mode of operation. In order to search and implement technical solutions on target plasma neutralization, one should be able to determine its parameters and record the dynamics of its propagation. At the same time, it is necessary to monitor the focal spot at each run using a diagnostic system that would not be positioned at the bremsstrahlung propagation axis. The paper presents the results of investigation into the target plasma propagation using the method of x-ray. The newly developed system for focal spot diagnostics in the negative direction and its principle of operation are described. The paper also presents the theoretical and experimental research on determining the LIA focal spot using the proposed diagnostic system by the “half-shadow of the sharp edge” method.