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# Structure of an electron beam formed in a high-current diode with arc plasma sources built-in to a cathode

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***The distributions of the current and energy densities of low-energy (up to 30 keV), high-current (up to 20 kA) electron beam of microsecond duration have been studied with the use of thermal imaging and wide-band oscilloscope. It was shown that energy density distribution is quite uniform (inside the circle of 2.5 cm in diameter that is closer to the outer diameter of cathode emitting part) at the guide magnetic field compared or somewhat higher in induction to the beam self-magnetic field. In the case of low guide magnetic field or its absence, the beam focuses and its energy density distribution becomes sharp non-uniform. It was also shown that even low magnetic field (about 25 mT) stabilizes the beam position in cross section. Any micro-non-uniformities of millimeter scale were not observed in the energy density distributions.***

*Keywords:* high-current electron beam, arc plasma sources, explosive emission, guide magnetic field, thermal imaging, beam focusing.

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