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Low-voltage arc discharge device with controllable plasma parameters¹ A.A. KUDRYAVTSEV, SPbSU, S.F. ADAMS, AFRL, J. BLESSINGTON, WVU, V.I. DEMIDOV, UES/WVU, E.A. BOGDANOV, SPbSU — A gas-discharge device which demonstrates control of the plasma parameters by using nonlocal properties of fast electrons [1] is presented. The discharge takes place between an indirectly heated cathode of 1 cm in diameter and an anode of 3 cm in diameter. A special molybdenum diaphragm (the control electrode) with an external diameter of 3 cm and internal diameter of 0.2 cm and thickness of 0.2 cm is placed between cathode and anode. The distance between cathode and diaphragm is 0.8 cm and the distance between the diaphragm and anode is 0.1 cm. A conical electrode (screen) restricts the discharge plasma in the radial direction. Combined experimental and modeling characterization of the device is presented. [1] V.I. Demidov, C.A. DeJoseph, Jr and A.A. Kudryavstev, PRL 95, 215002 (2005).

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Prefer Oral Session
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