

Abstract Submitted
for the GEC09 Meeting of
The American Physical Society

Radial Structure of Normal and Abnormal Modes of the DC glow discharge VALERIY LISOVSKIY, NADIYA KHARCHENKO, VLADIMIR YEGORENKOV, Kharkov National University, 4 Svobody sq., Kharkov, 61077, Ukraine — As is known dc glow discharge can burn in normal and abnormal modes. The aim of our work was to study the radial distribution of plasma density in both modes. Experiments were performed in the nitrogen pressure range $p = 0.1 - 2$ Torr and the dc voltage range $U < 600$ V. It is shown that in the normal mode the discharge occupies only a part of the cathode area and the current density radial profile has a maximum at the center of the discharge spot and then it goes down rapidly to the border of the spot. With the dc current increasing the radial current density profile becomes broader and its maximum value higher. The maximum value of the current density approaches a constant “normal” value before the transition of the discharge from the normal to the abnormal mode. In the abnormal mode the radial current density has almost a uniform profile across the electrode surface and the average current density increases with the dc current increasing.

Valeriy Lisovskiy
Kharkov National University, 4 Svobody sq., Kharkov, 61077, Ukraine

Date submitted: 08 Jun 2009

Electronic form version 1.4