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Normal Mode of DC Glow Discharge VALERIY LISOVSKIY, Kharkov National University, 4 Svobody sq., Kharkov, 61077, Ukraine, NADIIA KHARCHENKO, VLADIMIR YEGORENKOV, Kharkov National University —
We registered the normal current density j of the dc glow discharge in the nitrogen pressure range p = 0.3 - 10 Torr and determined the quantity j/p^2. Experiments were carried out in a T-shaped tube, the cathode was located at one end of the horizontal part of T, whereas another electrode (anode at the bottom of T) was grounded. Photos were taken through a window at the opposite end of the horizontal part of T exposing the cathode and the images were digitized. According to a generally accepted opinion this quantity j/p^2 had to remain constant on varying the current I in the normal mode. This proved to be valid only for $p < 1$ Torr. At higher pressure values the current growth was accompanied with a decrease of the quantity j/p^2. In a plasma column of small cross section the current density is larger to compensate for the increased loss of charged particles from the discharge volume.

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