

Abstract Submitted
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DC Breakdown of Low Pressure Gas in Long Tubes VALERIY LISOVSKIY, VERONIKA KOVAL, VLADIMIR YEGORENKOV, Kharkov National University, 4 Svobody sq., Kharkov, 61077, Ukraine — We studied the dc breakdown of low pressure nitrogen in the pressure range $p = 0.1 - 2$ Torr. The measurements were performed in the tube of radius $R = 4$ mm, whereas the inter-electrode gap values varied in the range $L = 2 - 250$ mm. The conventional Paschen law was shown to hold in short discharge tubes for which $L/R \leq 1$. At $L/R > 1$ the increase of the inter-electrode distance shifts the breakdown curves $U(p)$ to higher breakdown voltage values U and lower gas pressure ones (larger products of gas pressure and inter-electrode distance pL). The breakdown curve minima lie on the same straight line. At $L/R > 10$ increasing L makes the dc breakdown curves to shift to higher U values, their minima being observed almost at the same gas pressure value. Perhaps the electrons escaping to the tube walls due to diffusion perturb the electric field distribution and affect the development of the gas breakdown.

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