

Abstract Submitted
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The stratification of the dc glow discharge positive column in nitrogen VALERIY LISOVSKIY, Kharkov National University, Svobody sq.4, Kharkov 61077, Ukraine, EKATERINA ARTUSHENKO, VERONIKA KOVAL, SCPT, Svobody sq.6, Kharkov 61022, Ukraine — We have investigated the conditions of stratification of the positive column (PC) of dc glow discharge in nitrogen in the tubes with a radius of 4 mm and 27.5 mm. In every discharge tube the strata are observed in the confined areas of the current and the applied voltage over a limited range of gas pressures. The first (from the cathode end of the PC) striation is more pronounced and has a maximum length. The thickness d of the striation depends weakly on the discharge current, but it decreases with increasing gas pressure. Also, the striation with high order number has a smaller thickness. The stratification of the PC obeys the similarity laws. There is observed a coincidence of the extinction curves and the regions of existence of strata measured in a variety of discharge tubes and plotted against the product pR . Reduced strata thickness obeys the Goldstein-Wehner rule $d/R = C/(pR)^m$. At low values $pR < 1$ the constants equal to $C = 1.17$, $m = 0.17$, and the thickness of the stratum slowly decreases with gas pressure increasing. At higher gas pressure pR increase leads to an abrupt strata narrowing and spreading, and the constants become $C = 1$ and $m = 1.7$.

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