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## On the selectivity of population of the neon excited levels in the decaying He-Ne plasma\*

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The results of a spectroscopic study of the afterglow of a pulsed discharge in a He–Ne mixture are presented, showing the unique selective population of the upper level of the  $2p^34p$  configuration ( $3p_1$  in Paschen's notation) of a neon atom at a helium pressure of tens of Torr. The main measurements were conducted under conditions of competition between the excitation transfer from metastable He atoms ( $2^1S_0$ ) and the dissociative recombination of  $\text{HeNe}^+$  ions with electrons as sources of excited atoms. Helium pressure  $P_{\text{He}} \approx 0.08\text{--}20$  Torr, neon  $P_{\text{Ne}} \approx 0.0005\text{--}0.003$  Torr, the electron density  $[e] < 10^{11} \text{ cm}^{-3}$ . The results of the experiment indicate the existence of a mechanism that forms with an increase of helium pressure such a distribution of populations over  $2p^34p$  levels, in which more than 60% of the radiation flux of  $2p^33s \leftarrow 2p^34p$  transitions is concentrated in one spectral line of 352.0 nm.

**Keywords:** helium-neon plasma, excitation transfer, heteronuclear ions, dissociative recombination.

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