STUDY OF AURORA SPECTRUM CHARACTERISTICS

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Using the data of scanning photometers at Lovozero, Tumanny observatories and Barentsbourg station we have carried out a statistic study of the behaviour of 630.0/427.8 and 557.7/427.8 intensity ratios depending on the 427.8 nm emission intensity within the range of 150-2000 relays. The value of the 630.0/427.8 ratio decreases as the intensity of emission 427.8 nm grows, which agrees with the data known from the literature and with the ideas of the red emission excitation. A similar decrease of the intensity ratio of 557.7/427.8 with the growth of the 427.8 nm emission intensity had been reported before. However, the results of our measurements show the tendency towards some increase of the 557.7/427.8 ratio according to the growth of 427.8 nm emission intensity within the studied range of variation.
The composition of the atmosphere in the region of electron precipitation greatly impacts the magnitude and the nature of the dependency of ratio 557.7/427.8 on the 427.8 nm emission intensity. The most significant and chemically active are atomic oxigen and nitrogen oxide. By model of auroral atmosphere /1/ there were performed estimates of the variation of 557.7/427.8 rratio as a function of 427.8 nm emission intensity for various concentrations of NO under the constant concentration of atomic oxigen in the typical for night time auroras range of characteristic energies of the precipitating electrons of 3-10keV. The correlation of the experimental results, we had obtained, concerning the magnitude and the path of 557.7/427.8 ratio on the intensity of 427.8 nm with the model estimates shows the concentration of NO of the order of 109 cm-3, which agrees well with direct rocket measurements /2,3/.

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