

Abstract Submitted
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Aurora borealis' modelling in laboratory YULIIA BALKOVA, OLEKSII GIRKA, MAKSYM MYROSHNYK, BOHDAN BIDENKO, OLEKSANDR BIZYUKOV, V. N. Karazin Kharkiv National University — Basic physical mechanisms of Aurora are explained in this work: solar wind' electrons flux interacts with Earth's magnetic field in Earth's atmosphere with pressure gradient. Minimum possible size of laboratory facility is estimated in order of few centimeters on the base of the mean free path and the gyroradius values. The laboratory modeling of Earth's magnetic field shape was realized by the copper coil inside the plexi-glas sphere with the titanium coating (the thickness is 3 m) deposited on sphere by vacuum-arc method. DC glow discharge serves as electron source and also it is carried out an experiment with additional hot cathode electron source to compare. Working gas (pure argon, oxygen, helium, hydrogen and air), pressure of working gas (0,080,22 Torr), an impact energy of electron flux (0,63 keV) and magnetic field intensity (30230 Oe) were varied during experiments. The thickness of ionized layer increase with magnetic field intensity; the area of ionized layer increase with the impact energy of electrons; the radiation intensity of ionized layer increase with pressure of working gas.

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