

Abstract Submitted
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Stark-effect induced transformation in Rotational Spectra of the Nitrogen Molecule YURI SHCHERBAKOV, LEONID NEKHAMKIN, None — We present results on spectroscopic studies of filamentary streamer discharge in short air gap in stage of primary streamer propagation. We have found that the mid-resolved nitrogen second positive system (SPS) spectra emitted from the primary streamer head changes essentially in form within some nanoseconds as compared to typical one. Namely, main peak near the band head formed by the P-branches of Pi3-to-Pi3 transition turns into a widened twin-peak hump; with inessential modification of smooth short-wave part of the SPS-band as whole. Preliminary analysis testifies that such a spectra transformation can be related to Stark-effect under the electric field around 100-300 kV/cm because of splitting of nitrogen rotational terms due to strong mutual perturbation of doubly degenerated Lambda-sublevels affected by the field-induced electric dipole moment. So, this effect might be applicable to determine/estimate electric field and its spatial gradient. Thorough corresponding theory needs to be developed.

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None

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