

Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Simulation of streamer propagation in helium plasma jets supported by modulated voltage pulses¹ NATALIA BABAEVA, GEORGE NAIDIS, Joint Institute for High Temperatures RAS — Atmospheric pressure plasma jets (APPJs) are often formed by plasma bullets – guided streamers propagating along the jet axis [1]. Dynamics and structure of the streamers, as well as characteristics of produced plasma, are governed by a number of factors: the geometry of electrodes, the gas flow rate, the parameters of applied voltage pulses, etc. Recent experimental study of helium APPJs [2] has shown that modulation of applied voltage leads to oscillations of the streamer propagation velocity. In this talk, results on computational study of streamer dynamics in helium APPJs at application of modulated voltage pulses are presented. The effects of modulation on the streamer dynamics and on the plasma parameters (electric field, density of electrons) are considered. [1] X Lu, G V Naidis, M Laroussi and K Ostrikov, Phys. Rep. 540, 123 (2014). [2] M E Pinchuk, O M Stepanova, A M Astafiev, A V Lazukin and Zhaoquan Chen, Appl. Phys. Lett. 114, 194103 (2019).

¹Work is supported by the RFBR grant No. 17-52-16002 under LIA Kappa project.

George Naidis
Joint Institute for High Temperatures RAS

Date submitted: 29 May 2019

Electronic form version 1.4