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PULSED LASERS AND LASER APPLICATIONS

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ABSTRACTS

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Session E

NON-COHERENT UV AND VUV RADIATIO SOURCES

E-1

PECULIARITIES OF APOKAMP FORMATION FROM ELECTRODE WITH CERAMIC COATING

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This work continues the cycle of our studies of a new discharge phenomenon – the expansion of the glowing structure at a bend in the channel of a pulsed high voltage discharge in air. In [1], it was called the apokamp discharge, and the structure was called the apokamp. The apokamp consists of a bright offshoot and a long plume. We have shown experimentally and theoretically that the plume is a positive streamer starting from the bend of the plasma channel with a characteristic speed of tens and hundreds of km/s, depending on the applied voltage, pressure and type of gas. The bending of the canal provides a local amplification of the field, which sets the starting orientation of the expanding streamer canal [2, 3].

In this work, the apokamp is formed from an electrode with a flat ceramic coating. It was found that, in comparison with the two electrode configuration, under the same conditions of discharge initiation at an air pressure of 120 Torr, the average velocity of the apokamp propagation up to 520 km/s was recorded. Analysis of the emission spectra of the apokamp revealed an increase in the intensity of the nitrogen ion lines with a wavelength of 391.4 nm in the streamer zone. With a decrease in pressure to 30 Torr, the propagation rate of the apokamp decreases by a factor of ~ 4.

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E-2

NARROW BAND UV LAMP BASED ON IODINE VAPOR

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To date, various sources of spontaneous emission in the UV and VUV spectral regions have been developed. One of the most efficient sources are high pressure barrier discharge excilamps, which use