Abstract Submitted
for the GEC09 Meeting of
The American Physical Society

Spectroscopic studies of the primary-to-secondary streamer transition in short air gap YURI SHCHERBAKOV, High-Voltage Research Center, LEONID NEKHAMKIN, REIDAR SIGMOND, Norwegian University of Science and Technology (NTNU) — We present results on synchronous spectroscopic and electrical studies of the filamentary streamer discharge in short air gap in stage of primary-to-secondary streamer transition. This study continues our previous studies of the high-stable DC positive streamer corona by measurement of absolute intensities of the second positive (SPS) and first negative (FNS) systems of molecular nitrogen. Special attention was paid to measurement of the luminosity intensities just at the moment of arrival of the primary streamer at the cathode followed by the stage of very fast redistribution of the electric field as well as by the stage of the relatively low-speed neutralization of the primary streamer channel to transform finally to the secondary streamer in resistive stage of the residual streamer channel. Spectroscopic data have been supplemented with synchronous electric current waveforms. Some preliminary theoretical analysis has been done for the very fast stages of streamer dynamics near the cathode.

Yuri Shcherbakov
High-Voltage Research Center

Date submitted: 12 Jun 2009 Electronic form version 1.4