

Abstract Submitted  
for the GEC17 Meeting of  
The American Physical Society

**Picosecond spectroscopy and electric field of interacting streamers on dielectric surface**<sup>1</sup> TOMAS HODER, PETR SYNEK, MIRKO CERNAK, Masaryk University, Brno, Czech Republic — Surface streamers in coplanar barrier discharge in synthetic air at 30 kPa pressure were studied by time-correlated single photon counting enhanced optical emission spectroscopy and far-field microscopy enhanced intensified CCD camera. The discharge operated in a regime where two subsequent micro-discharges appeared within the same voltage half-period. During the second micro-discharge the positive surface streamers mostly follow the interface between the area of deposited charge from the previous one and the area of uncharged dielectric surface. A suppressed streamer propagating over the area of deposited surface charge was tracked and an evidence of surface streamer reconnection is hypothesized. A spatiotemporal distribution (resolution of 120 ps and 100 microns) of the reduced electric field strength was obtained for both micro-discharges from the recorded luminosities of the molecular nitrogen. The reduced electric field of positive streamers in the first micro-discharge reached 1200 Td. For the second one, the electric field values for the streamer at the interface are slightly lower than that, while for the suppressed streamers are even higher.

<sup>1</sup>This research was funded by the Czech Science Foundation project 16-09721Y and project LO1411 (NPU I) of Ministry of Education Youth and Sports of Czech Republic.

Tomas Hoder  
Masaryk University, Brno, Czech Republic

Date submitted: 29 May 2017

Electronic form version 1.4