

Abstract Submitted  
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**Do dielectrics attract streamer discharges?**<sup>1</sup> ANNA DUBINOVA, JANNIS TEUNISSEN, UTE EBERT, Centrum Wiskunde & Informatica, MULTISCALE DYNAMICS TEAM — Streamer discharges developing near dielectric materials can cause sparks and surface flashovers. This effect is to be avoided in high voltage technology. Dielectric materials tend to attract the discharge due to polarization effects resulting in the modification of the local electric field. Other mechanisms known for influencing streamer discharge propagation include photoionization, background ionization, accumulation of surface charge on the dielectrics and secondary electron emission. However, the actual physical mechanisms responsible for the surface flashovers are still under discussion. Developing advanced simulation tools, we aim at getting insight into the nature of streamer discharges in the presence of dielectrics in full 3D. We report the results of our simulations showing essential differences between a positive streamer propagating due to background ionization and due to photoionization. We compare our numerical results with experiments. We also describe a numerical method (a generalized Ghost Fluid Method) which allowed us to include dielectric interfaces into our streamer models, in an accurate and fast manner.

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