

Abstract Submitted
for the GEC15 Meeting of
The American Physical Society

Student Award Finalist: Advances in the three-dimensional simulation of streamer discharges¹ JANNIS TEUNISSEN, Center for Mathematics and Computer Science (CWI), Amsterdam, The Netherlands, UTE EBERT, Center for Mathematics and Computer Science (CWI), Amsterdam, The Netherlands and Eindhoven University of Technology — We have implemented a 2D and 3D streamer model inside AFiVO, a simulation framework that we have recently developed. We use numerical techniques such as adaptive mesh refinement, parallel multigrid and a novel implementation of photoionization to push simulations to new limits. This allows us to study the interaction of two streamers in 3D, the branching of streamers in 3D, or the propagation of a streamer over a dielectric surface. Simulations in 2D also benefit, allowing for a relatively interactive exploration of parameter regimes. We present highlights of the new simulation possibilities.

¹JT acknowledges support from STW project 10755

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Date submitted: 19 Jun 2015

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