Towards robust explicit models for streamer discharges[1] JANNIS
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EBERT, CWI, Amsterdam, The Netherlands and Eindhoven University of Technology, The Netherlands — Computer simulations are an important tool to study
and understand the behavior of streamer discharges. Such simulations can computationally be quite costly, because a high-resolution mesh is required to accurately
model the growth of streamers. In recent years, the use of adaptive mesh refinement (AMR) and parallelized simulations codes have made it possible to study the
evolution of multiple streamers in 3D. However, a problem that often arises with
explicit time step methods – which are the most efficient – is that very small time
steps are required for numerical stability. Two challenging cases will be presented:
a positive streamer that stops to grow in a low background field, and a positive
streamer reaching a dielectric surface. Model adaptations to allow for larger time
steps and more robustness will be discussed.

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