3D Spatially hybrid model for streamer discharge ANBANG SUN, JANNIS TEUNISSEN, Centrum Wiskunde & Informatica, UTE EBERT, Centrum Wiskunde & Informatica, Eindhoven University of Technology — Streamers are rapidly growing plasma filaments. They play an important role in the early stages of lightning, as well as in industrial application such as lighting, plasma assisted combustion and disinfection. In previous work, the first generation of 3D spatially hybrid codes was developed by Chao Li, to study the propagation of negative streamer without photoionization in a background field above the breakdown value. We now have set up the second generation codes to improve and optimize the original program, and to make it accessible. Adaptive Mesh Refinement and parallel computing technique are being adopted as well, to increase the accuracy, efficiency and parameter range of simulations. The codes are being used to study the streamers emergence from the inception cloud, streamers branching and feather formation in different N2:O2 ratios, and streamers interaction.

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