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Model reduction for streamer coronas UTE EBERT, CWI Amsterdam and Eindhoven Univ Tech, Netherlands, JANNIS TEUNISSEN, CWI Amsterdam, Netherlands, ALEJANDRO LUQUE, Instituto de Astrofisica de Andalucia (IAA), CSIC, Granada, Spain — Pulsed gas discharges in nature and technology can consist of hundreds to ten thousands of streamers. Such streamer coronas up to now are modeled in a phenomenological manner; a model setup to include more microscopic information was provided by Luque and Ebert [New J. Phys. 16, 013039 (2014)]. To implement the proper microphysics, we here analyze the interior dynamics of propagating streamer heads, we review, unify and extend earlier analytical approximations, and we compare them with fluid simulation results derived with the Afivo computational framework http://www.cwimd.nl/doku.php?id=codes:afivo developed by Teunissen.

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