Abstract Submitted
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Electron kinetics in fast-pulsed discharges[1] LUIS ALVES, A. TEJERO-DEL-CAZ, V. GUERRA, N. PINHAO, C.D. PINTASSILGO, T. SILVA, IPFN/IST-UL — This work presents a comparative study of the electron kinetics in fast-pulsed discharges produced in dry air (80% N_2 - 20% O_2), considering a quasi-stationary and a time-dependent solution of the electron Boltzmann equation (EBE), written under the classical two-term approximation. The simulations were performed using the open-source LisbOn KInetics Boltzmann solver (LoKI-B) [1,2], which handles simulations in any atomic / molecular gas mixture, considering first and second kind collisions with any target state (electronic, vibrational and rotational), characterized by any user-prescribed population. The original capabilities of LoKI-B have been extended in order to obtain the time-dependent solution of the EBE for a pulsed electric field. Noticeable deviations, between the quasi-stationary and the time-dependent calculations of the electron energy distribution function and related macroscopic coefficients, are observed below the microsecond scale, for a pulse peaking at 45 Td with rise and fall times of ˜1μs and ˜10μs, respectively.
[1] A. Tejero-del-Caz *et al*, Plasmas Sources Sci. Technol. **28** (2019) 043001
[2] https://github.com/IST-Lisbon/LoKI

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