

Abstract Submitted
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Sampling the low-energy range of EEDF DOMINIK A. DAHL, CHRISTIAN M. FRANCK, ETH Zurich High Voltage Laboratory — Electron swarms are investigated by the classical Pulsed Townsend Method in mixtures of N_2/CO_2 with controlled traces of SF_6 . The electron swarms are released from a back-illuminated photocathode by 1.5 ns FWHM laser pulses and drift in the homogeneous field of Rogowski electrodes. From an analysis of displacement currents the coefficient of electron attachment to gas molecules η is obtained. The pronounced s-wave attachment of SF_6 acts on the electron swarm energy distribution (EEDF) by reducing the number of electrons in the energy range below 0.2 eV. It will be investigated if, vice versa, the observed η can be used as a measure for the EEDF in the range below 0.2 eV. The effect of the N_2/CO_2 mixing ratio on η will be measured and put in relation to the difference between N_2 and CO_2 concerning their elastic and inelastic cross sections. The goal is to provide data about that range of the EEDF which are not accessible by optical emission spectroscopy or by Langmuir probes.

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