Physical properties of Plasma Jets Emitted in Pulsed Capillary Discharges.\textsuperscript{1} GONZALO AVARIA, HEMAN BHUYAN, MARIO FAVRE, EDMUND WYNDHAM, Pontificia Universidad Catolica de Chile, Departamento de Fisica, Casilla 306, Santiago 22, Chile — Open ends pulsed capillary discharges (PCD) establish natural conditions for the generation of plasma jets. We have investigated the physical properties of the plasma jet emitted in a PCD, operating in a continuous pulsing mode at 10 kV (\(~\sim\)2 kA, 10 ns), with frequencies up to 50 Hz. The discharge is operated in argon and nitrogen, at pressures in the 0.4—1.0 Torr range. A dual, optoisolated, fast Langmuir probe, placed at the anode side, close to the capillary exit, is used to measure the characteristic electron temperature ($T_e$) and electron density ($N_e$) of the plasma jets, with temporal and spatial resolution. Time integrated visible spectroscopy is used to identify the plasma jets components. Characteristic values of $T_e$ and $N_e$ are found to be in the tens of eV and $10^{13}$ cm$^{-3}$, respectively. Based on these measurements, a comprehensive characterization of the PCD plasma jets will be presented.

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