Abstract Submitted
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Observations on the dynamics of the plasma sheath axial acceleration phase on a Plasma Focus Discharge of hundreds of Joules[1] GONZALO AVARIA, Comision Chilena de Energia Nuclear, Santiago, Chile, ALEJANDRO CLAUSSE, CNEA, Universidad del Centro de Buenos Aires, Argentina, OSVALDO CUADRADO, Comision Chilena de Energia Nuclear, Santiago, Chile, NELSON VILLALBA, Universidad Metropolitana de Ciencias de la Educacion, Santiago, Chile, JOSE MORENO, CRISTIAN PAVEZ, LEOPOLDO SOTO, Comision Chilena de Energia Nuclear, Santiago, Chile — The plasma sheath evolution in the axial acceleration phase of plasma focus discharges is of interest for fundamental studies of the ionization and electron density evolution at the early stages of plasma formation, in order to improve the understanding of its influence in pinch development characteristics. We present spatial and temporal resolved measurements performed with a 0.5 m imaging spectrometer that captures the emission of the interelectrode region in the PF-400J (176-539 J, 880 nF, 20-35 kV, quarter period ˜300 ns) Plasma Focus Discharge. Spectral images of the plasma sheath at different times of the current pulse evolution were acquired with an ICCD integrating over a 3 ns window. The sheath speed was determined to be approximately 43.6 km/s for discharges in Hydrogen at 9 mbar. Comparison of these measurements with numerical calculations, based on a lumped parameter model, show excellent correspondence. Electron density calculations at different stages of the plasma evolution are also presented.

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