

Abstract Submitted  
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**Experiments, simulations and modelling of the electron energy distribution functions in low pressure rf excited non-local plasmas** ROD BOSWELL, CHRISTINE CHARLES, KAZUNORI TAKAHASHI<sup>1</sup>, Australian National University — Plasma systems having a critical dimension less than a mean free path for electron scattering from neutrals show large deviations from Maxwellian distributions in the electron energy distribution functions (eedf). The plasma excitation method, DC positive column and gamma, rf capacitive, inductive and wave all produce different effects on the eedf which must be unravelled to determine whether the boundaries or the ionisation mechanism dominate the details of the distribution. In particular, a magnetic field will serve to decouple the capacitive component of an inductive antenna from the purely “inductive” excitation. This talk will present experimental measurements of the electron energy probability function (eepf) using a compensated Langmuir probe and the Druyvesteyn method to determine the eepf. Problems associated with non-isotropic distributions will be discussed. The experimental results will be compared with 1D 3v self consistent PIC simulations of “inductive” heated discharges at different frequencies and lengths. An analytical model using a Druyvesteyn distribution of electrons shows very good agreement with experimental measurements.

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