

Abstract Submitted
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Spatial and temporal evolution of electron density and plasma potential by resonance hairpin probe and emissive probe during pulsed laser photo-detachment of negative ions¹ N. SIRSE, M.A. MUJAWAR, J. CONWAY, M.M. TURNER, National Centre For Plasma Science and Technology, Dublin City University, Ireland, S.K. KARKARI, National Centre for Plasma Science and Technology, Dublin City University, Ireland and Institute for Plasma Research, Bhat, Gandhinagar, India — Laser photo-detachment is the most commonly used technique for measuring negative ion parameters. In this study we measured the electron density perturbation using a resonance hairpin probe and plasma potential using floating emissive probe along the path and outside the laser beam. Experiment is performed in a 13.56 MHz inductive RF discharge for various ranges of power and pressures. It is found that the plasma potential rises instantaneously for confining the photo-detached electrons and decays at a rate dictated by the diffusion of negative ions from the adjacent layer. This is found to be consistent with the spatial and temporal evolution of electron density.

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