

Abstract Submitted
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Investigation of a Planar Langmuir Probe Orientated Parallel to the direction of Flow in a Laser Ablation Plasma PETER SHEERIN, MILES M. TURNER, Dublin City University, Ireland, BRENDAN DOGGETT, JAMES G. LUNNEY, Trinity College Dublin, Ireland — Langmuir probes are a well established tool for investigating the characteristics of laser produced plasmas. Such plasmas typically take the form of highly directed plumes, with flow velocities that are supersonic with respect to the ion sound speed. The behaviour of planar Langmuir probes in such conditions are dependant on both the plasma parameters and the orientation of the probe with respect to the flow. The theory for such probes in supersonic flowing plasmas is not well developed. This limits their usefulness as diagnostic tools in the various applications where such conditions are encountered. The adaptations made to the associated theory of plasma ion implantation (PIII) to describe the I-V characteristics of the planar Langmuir probe in a flowing plasma are discussed. The resultant analytical theory when used in combination with one dimensional particle in cell simulations is shown to provide an excellent description of the behaviour of the planar Langmuir probe in a flowing plasma at early times.

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