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Design and Use of an Elsässer Probe for Projection of Alfvén Wave Fields According to Wave Direction D.J. DRAKE, C.A. KLETZING, F. SKIFF, Department of Physics and Astronomy, University of Iowa — Measurement of plasma transport using probes usually requires simultaneous measurement of multiple quantities from which transport can be inferred. Particle and energy transport have received the most attention. We have designed a simultaneous fluctuating E and B field probe to evaluate wave Poynting flux for application to Alfvén wave experiments in the LAPD. This new probe allows projection of measured wave fields onto Elsässer variables ($Z^{\pm} \equiv (E \times B_0)/|B_0|^2 \pm B/(4\rho_0\pi)^{0.5}$) where the time averaged background field B_0 and plasma mass density ρ_0 are measured by other probes. Experiments were conducted in a singly ionized He-H plasma in the Large Area Plasma Device (LAPD) at UCLA. The results were compared with existing measurement techniques for this type of plasma in the LAPD [1]. Findings will be discussed at the conference.

[1] C. A. Kletzing, D. J. Thuecks, F. Skiff, S. R. Bounds, and S. Vincena, Phys. Rev. Lett. **104**, 095001 (2010).

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