

Abstract Submitted  
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**Experimental Validation of a Branched Solution Model for Magnetosonic Ionization Waves in Plasma Accelerators**<sup>1</sup> THOMAS UNDERWOOD, KEITH LOEBNER, MARK CAPPELLI, Stanford University — Detailed measurements of the thermodynamic and electrodynamic plasma state variables within the plume of a pulsed plasma accelerator are presented. A quadruple Langmuir probe operating in current-saturation mode is used to obtain time resolved measurements of the plasma density, temperature, potential, and velocity along the central axis of the accelerator. This data is used in conjunction with a fast-framing, intensified CCD camera to develop and validate a model predicting the existence of two distinct types of ionization waves corresponding to the upper and lower solution branches of the Hugoniot curve. A deviation of less than 8% is observed between the quasi-steady, one-dimensional theoretical model and the experimentally measured plume velocity.

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