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Deconvolving Kr II laser-induced fluorescence signals for a test of Bohm's Criterion near negatively biased grid in a single ion species Kr plasma¹ COOPER KENT, Dept. of Physics & Biophysics, University of San Diego, PEXUAN LI, NOAH HERSHKOWITZ, GREG SEVERN, Dept. of Engineering-Physics, University of Wisconsin-Madison — Recent experiments of sheath formation in multiple ion species electropositive plasma have shown that ions generally do not reach the sheath edge traveling at their individual Bohm speeds. However, it is still a widely held view, and modeling assumption, that they do. The experiments in multiple ion species electropositive plasma were pursued in order to perform the first test of the generalized Bohm Criterion for three ion species plasma. The goal can be reached if we perform a deconvolution of the Kr II laser-induced fluorescence (LIF) signals, since one of the three ion species experiments used Kr II ions. But Kr II ions have significant isotope shifts and hyperfine structure, hence the need for deconvolution. Here we demonstrate and discuss one method for deconvolution, Tikhonov Regularization, using data sets from a single ion species Kr plasma with a nominal electron temperature and densities are $T_e \sim 3.5\text{eV}$, and $n_e \sim 3 \times 10^9\text{cm}^{-3}$, respectively. and eV. The sheath was set up in the neighborhood of a negatively biased grid. Results are discussed.

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