

Abstract Submitted  
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**The effect of electron beams on emission line ratios used in spectroscopic diagnostics**<sup>1</sup> NICHOLAS OUART, Plasma Physics Division, NRC/NRL Postdoc, Naval Research Laboratory, JOHN GIULIANI, ARATI DASGUPTA, Plasma Physics Division, Naval Research Laboratory, JOHN APRUZESE, L-3 Communications, ROBERT CLARK, Berkeley Research Associates — Emission line ratios have been used as an effective diagnostic for the determination of the plasma parameters. Prior methods have assumed that the electron distribution function, EDF, is Maxwellian. However, previous experiments have measured electron beams and  $K\alpha$  line emission. The  $K\alpha$  emission was produced as a result of the electron beams ionizing an inner-shell electron. The presence of such hot electrons suggests that the EDF is simply not Maxwellian and requires a modification in the high energy tail. These high energy electrons can produce doubly excited ions with inner-shell vacancies, alter the ionization kinetics, and furthermore impact line ratios used to determine the plasma parameters. The effect of electron beams on synthetic spectra from a non-LTE copper pinch model will be presented and discussed in light of experimental data.

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Nicholas Ouart  
Naval Research Laboratory

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