

Abstract Submitted
for the SES05 Meeting of
The American Physical Society

Charge **Corre-**
lations in Spectral Line Shapes JEFFREY WRIGHTON, JAMES DUFTY,
University of Florida — Spectral line broadening theory is reformulated to examine the validity of standard approximations for the correlations among the plasma perturbers (electrons and ions) and with a charged radiator. Using conditions for quasi-static ions, the broadening operator (width and shift operator) is calculated to second order in the interaction of the plasma perturbers with the bound electrons of the radiator. All other charge correlations are included without approximation, including plasma coupling to the total net charge on the radiator. A semi-classical representation of these results provides the necessary physical quantities required for recently proposed methods of molecular dynamics simulation in plasma spectroscopy. The effects of correlations on the microfield distribution, shift operator, and electron broadening are discussed briefly.

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Date submitted: 05 Aug 2005

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