

Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Electronic Excitation of Water and Methanol by Electron Impact

THOMAS RESCIGNO¹, Lawrence Berkeley National Laboratory, ANN OREL², University of California, Davis — It is only in recent years that measured absolute differential cross sections (DCS) for electronic excitation of water have become available. The electronic spectrum of water is characterized by broad, overlapping dissociative bands superposed by weaker Rydberg bands and the requisite analysis of measured energy loss spectra needed to produce absolute DCS is therefore far from straightforward. Recent measurements [1] of absolute DCS show significant differences with an earlier experimental study [2], prompting us to undertake a new theoretical study of this problem. We will report the results a multi-channel variational study of electronic excitation of water using the complex Kohn method and show how the computed cross sections compare with earlier theoretical studies as well as experiment. We will also present results of a similar study on electron impact excitation of methanol which has also been the focus of a recent experimental study [1].

[1] M. Khakoo and L. Hargreaves (private communication).

[2] M. Brunger et al. *Int. J. Mass Spec.* **281**, 80 (2008).

¹Work supported by USDOE, OBES, Office of Chemical Sciences and Lawrence Berkeley National Laboratory.

²Work supported by the National Science Foundation, while working at the Foundation.

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Date submitted: 24 Jan 2013

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