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Low Energy Electron Impact Excitation of Water¹ KEVIN RALPHS, GABRIELA SERNA, LEIGH R. HARGREAVES, MURTADHA A. KHAKOO, California State University Fullerton, Physics Department, CA, 92834, CARL WINSTEAD, B. VINCENT MCKOY, Caltech Physical Chemistry, Pasadena, CA, 91125 — We present normalized absolute differential and integral cross-section measurements for the low energy electron impact excitation of the lowest dissociative 3B_1 , 1B_1 , 3A_1 and 1A_1 states of H_2O . The DCS were taken at incident energies of 9eV, 10eV, 12eV, 15eV and 20eV and scattering angles of 15° to 130° and normalized to the elastic electron scattering measurements of [1]. The DCS were obtained after a sophisticated unfolding of the electron energy loss spectrum of water using photoabsorption data in the literature as investigated by Thorn et al. [2]. Our measurements extend those of [2] to near-threshold energies. We find both important agreements and differences between our DCS and those of [2]. Comparison to our theory (multi-channel Schwinger) and that of earlier work [3] will also be presented.

[1] M. A. Khakoo et al. Phys. Rev. A 78, 052710 (2008).

[2] P. A. Thorn et al. J. Phys. B.: At. Mol. Phys. 40 697 (2007).

[3] T. J. Gil Phys. Rev. A 49, 2642 (1994)

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