

Abstract Submitted
for the TSF06 Meeting of
The American Physical Society

THz Time-Domain Spectroscopy of D₂O¹ JENELYN RAMOS, Southwestern Adventist University, JOJIT TORCEDO, HARRY TOM, University of California Riverisde — To better understand the properties of water, the dielectric spectrum of water is measured using Terahertz Time-Domain Spectroscopy where data is collected between 20 GHz to 2 THz. We use the reduced polarization formula to obtain the microscopic dipole correlation function from the macroscopic dielectric function. The microscopic dipole correlation function is fit by 2 Debye relaxations and nine Lorentzians where four of the Lorentzians are known and the five remaining are of both positive and negative amplitude which is the first evidence of anticorrelated effects of bulk water. The data of water at 4 °C shows an extra tenth low frequency oscillation at 21 GHz that isnt found at 0.5 or 8 °C. This feature is significantly larger in amplitude than the others. The appearance and disappearance of a new peak at 21 GHz may be fundamentally related to the density anomaly of water. We test this possibility by searching for a similar anomalous feature in D₂O around its 11.2 °C density anomaly.

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Date submitted: 15 Sep 2006

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