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Terahertz Time-Domain Spectroscopy of D_2O JOJIT TORCEDO, HARRY TOM, UC Riverside — The dielectric spectrum of D_2O between 15 GHz and 2 THz was measured using Terahertz Time-Domain Spectroscopy. The motivation of this work is to gain an understanding of liquid water dynamics on a molecular level. To achieve this, we use a correction to the dielectric response of polar molecules known as the reduced polarization. This correction allows us to relate the macroscopic quantity of the permittivity to the microscopic correlation function in a manner appropriate for polar liquids. Similar to previous studies on H_2O, evidence is shown of correlated and anti-correlated dipole-dipole interactions in liquid D_2O. More interestingly, the spectra also reveal dynamics that could be intimately related to the density anomaly of water.

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