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Electrical properties of free electron laser generated warm dense water through reflection and transmission measurements XIEYU NA, ZHIJIANG CHEN, SLAC, PHILIPP SPERLING, None, CHANDRA CURRY, JAKE DORALEK, SLAC, JONGJIN KIM, None, PETR BRUZA, ELI, HANS BECHTEL, Berkeley, AMY CORDONES, SLAC, SVEN TOLEIKIS, DESY, JAN KERN, DANIEL DEPONTE, STEFAN MOELLER, SIEGFRIED GLENZER, SLAC, 0 COLLABORATION — Driven by the breakdown of Spitzer theory in WDM regime, electrical conductivity is of great importance as an essential transport coefficient. Besides, broadband AC conductivity is also widely used to examine the relevant theoretical models. Nowadays, powerful X-, XUV-sources such as FEL enable improved accuracy in WDM diagnosis. We present in this study a pump-probe experiment ran at Desy, in Germany. ˜100nm thick water sheets were isochorically heated by ˜100fs FEL, and probed by an optical laser with ˜500-850nm tunable wavelengths. Water in its liquid phase is transformed by increasing the temperature from a molecular to a dissociated/ionic regime. Reflection and transmission measurements were carried out in order to infer AC conductivity of the warm dense water to test the DFT-MD model. More precisely, we focus here on the temporal evolution of the interferometry measurement in transmissive mode: derived phase shift values were used to obtain the complex refractive index and then the AC conductivity at a given optical frequency.

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