Abstract Submitted
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Measuring the static and dynamic magneto-optical constant across the entire M-edge in a reflection geometry using polarization scanning[1] PHOEBE M. TENGDIN, DMITRIY ZUSIN, CHRISTIAN GENTRY, ADAM BLONSKY, JILA, University of Colorado, Boulder, JUSTIN SHAW, HANS NEMBACH, TOM J. SILVA, National Institute of Standards and Technology, Boulder, USA, PETER OPPENEER, Department of Physics and Astronomy, Uppsala University, Sweden, HENRY C. KAPTEYN, MARGARET M. MURNANE, Department of Physics and JILA, University of Colorado, Boulder — The off diagonal components of the dielectric permittivity tensor (ϵ_{xy}) provide a critical link between the microscopic band structure of a ferromagnetic material and its measured magneto-optical response. However, access to the full ϵ_{xy} of a material in the extreme ultraviolet (EUV) region spanning the M shell absorption edges has remained limited due to the difficulty in analyzing the polarization of EUV light. In this work, we present a new all-optical EUV technique that allows us to measure the ϵ_{xy} tensor across the M shell absorption edges of a ferromagnet using a table-top high harmonic EUV system. When combined with recent advances in laser-driven high harmonic sources, this technique is also capable of capturing the dynamically-changing ϵ_{xy}, and thus the evolving far from equilibrium band structure across the entire M-shell absorption edge of a material, with femtosecond time resolution[1]. [1]Nature Comm. 7, 12902 (2016)

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