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**Determining the absolute phase and intensity of a two-color laser field** D. RAY, W. CAO, Z. CHEN, S. DE, H. MASHIKO, P. RANITOVIC, C.D. LIN, I.V. LITVINYUK, C.L. COCKE, J. R. Macdonald Laboratory, Physics Department, Kansas State University, Manhattan, Kansas 66506-2601, USA, M.F. KLING, Max-Planck Institute of Quantum Optics, Hans-Kopfermann Strasse 1, D-85748 Garching, Germany, G.G. PAULUS, Institute of Optics and Quantum Electronics, 07743, Jena, Germany — The left-right asymmetry of electron emission from single atoms by intense few-cycle 800 nm pulses is well known and forms the basis of the stereo-phasemeter method[1] of measuring the carrier-envelope phase of short pulses. Here we report experiments which demonstrate a similar asymmetry caused by the superposition of two colors (800 and 400nm) forming many-cycle pulses. We obtain Xe spectra as a function of the phase between the two colors. The spectra exhibit a pronounced left-right asymmetry as a function of phase in both the "direct" and the "plateau" regions of electron energy. Recently established quantitative rescattering theory (QRS) allows us to analyze momentum images of the rescattering (plateau) high-energy electrons. Using QRS theory we can determine accurately the laser peak intensity and the absolute phase of the two-color electric field. Our results also agree with semi-classical calculations. [1]G. G. Paulus et al., PRL **91**, 253004 (2003).

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