

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Berry phase mechanism for polarization rotation in chiral metals<sup>1</sup>**

JOSEPH ORENSTEIN, JOEL MOORE, UC Berkeley and LBNL — There is currently considerable interest in inversion symmetry breaking in unconventional metals, particularly in chiral stacking of atomic layers with stripe-like charge density modulation in systems such as TiSe<sub>2</sub> and the cuprate superconductor LBCO. A signature of broken chiral symmetry is optical gyrotropy, that is, different indices of refraction for left and right circular polarized light. In this talk we show that intraband gyrotropic response is a consequence of the anomalous velocity associated with the non-zero Berry curvature and we derive its strength for a model band structure as a function of the chiral order parameter. This work demonstrates that optical gyrotropy in chiral metals is the linear response counterpart to the anomalous Hall effect in time-reversal breaking metals.

<sup>1</sup>Office of Science, Office of Basic Energy Sciences, Materials Sciences and Engineering Division, of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231.

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Date submitted: 08 Nov 2012

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