Abstract Submitted
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Resonant x-ray scattering from a skyrmion lattice[1] S. ROY, M.C. LANGNER, S.K. MISHRA, J.C.T. LEE, X.W. SHI, M.A. HOSSAIN, Y.-D. CHUANG, S.D. KEVAN, R.W. SCHOENLEIN, Lawrence Berkeley National Laboratory, USA, S. SEKI, RIKEN, Center for Emergent Matter Science, Wako, Japan, Y. TOKURA, University of Tokyo, Tokyo, Japan — Topologically protected novel phases in condensed matter systems are a current research topic of tremendous interest due to both the unique physics and their potential in device applications. Skyrmions are a topological phase that in magnetic systems manifest as a hexagonal lattice of spin-swirls. We report the first observation of the skyrmion lattice using resonant soft x-ray diffraction in Cu_2OSeO_3, a cubic insulator that exhibits degenerate helical magnetic structures along ¡100¿ axes in zero magnetic field. Within a narrow window of temperature and applied magnetic field we observed the six fold symmetric satellite peaks due to the skyrmion lattice around the (001) lattice Bragg peak. As a function of incident photon energy a rotational splitting of the skyrmion satellite peaks was observed that we ascribe to the two Cu sublattices of Cu_2OSeO_3, with different magnetically active orbitals. The splitting implies a long wavelength modulation of the skyrmion lattice.

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Sujoy Roy
Lawrence Berkeley National Laboratory

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