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Magnetic Anisotropy of a Three-Dimensional Honeycomb Iridate
KIMBERLY MODIC, ROSS MCDONALD, ARKADY SHEKTER, Los Alamos Natl Lab, JAMES ANALYTIS, UC Berkeley, BRAD RAMSHAW, Los Alamos Natl Lab — We present the magnetic anisotropy of a 3-dimensional honeycomb iridate, where the large spin-orbit coupling of iridium provides the possibility for exotic magnetic ground states. A complete angular dependence of magnetic torque provides evidence for highly spin-anisotropic exchange interactions at low temperature. An extension of these measurements to high magnetic fields shows that the magnetic anisotropy switches sign at 50 T and becomes five times larger than the anisotropy at low fields. The anisotropy continues to increase up to the largest applied fields suggesting the presence of new magnetically ordered states.

Kimberly Modic
Los Alamos Natl Lab

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