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Magnetism in a new structural family of iridates JAMES ANALYTIS, TESS SMIDT, University of California Berkeley, ROSS MCDONALD, KIM MODIC, Los Alamos National Lab, ITAMAR KIMCHI, ASHVIN VISHWANATH, University of California Berkeley, RADU COLDEA, ALUN BIFFIN, S.K. CHOI, University of Oxford, UK, JULIA CHAN, University of Texas at Dallas, PILANDA WATKINS-CURRY, Louisiana State University — The physics of Mott insulators underlies diverse phenomena ranging from high temperature superconductivity to exotic magnetism. Although both the electron spin and the local orbitals play a key role in these phenomena, in most systems these are connected only indirectly — via Pauli exclusion — since the spin-orbit interaction is relatively weak. Iridium-based oxides (iridates) depart from this expectation, since the spin-orbit coupling dominates over other interactions, such that the Mott physics obtains a strong orbital character. In some cases this is thought to generate strongly spin-anisotropic exchange. Here we report a new family of iridates whose magnetic character shows that this material has highly spin-anisotropic interactions, a key ingredient of the exotic possibilities associated with these compounds.

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