

Anisotropic hysteretic Hall-effect and magnetic control of chiral domains in the chiral spin states of $\text{Pr}_2\text{Ir}_2\text{O}_7$

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We uncover a strong anisotropy in both the anomalous Hall effect (AHE) and the magnetoresistance of the chiral spin states of $\text{Pr}_2\text{Ir}_2\text{O}_7$. The AHE appearing below 1.5 K at zero magnetic field shows hysteresis which is most pronounced for fields cycled along the [111] direction. This hysteresis is compatible with the field-induced growth of domains composed by the 3-in 1-out spin states which remain coexisting with the 2-in 2-out spin ice manifold once the field is removed. Only for fields applied along the [111] direction, we observe a large positive magnetoresistance and Shubnikov de Haas oscillations above a metamagnetic critical field. These observations suggest the reconstruction of the electronic structure of the conduction electrons by the field-induced spin-texture.