

Abstract Submitted
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Spin Switching and Magnetization Reversal in Single-Crystal NdFeO₃¹ SHUJUAN YUAN², Shanghai University, China, FANG HONG, University of Wollongong, Australia, LA CHEN, YABIN WANG, WEI REN, JINCANG ZHANG, SHIXUN CAO, Shanghai University, China, GANG CAO, University of Kentucky, USA — We report results of our recent study of single-crystal NdFeO₃ that features a strong interaction between 3d and 4f electrons, which generates *two distinct magnetic states* ordered at 17 K and 170 K. This study reveals novel magnetic behavior that is highly sensitive to the orientation and history of magnetic field and is characterized by the following: **(1)** sharply contrasting magnetization, $M(T)$, along the ***a*** and ***c***-axis; **(2)** an abrupt spin-switching along the ***a***-axis via a first-order transition below 17 K when the system is *zero-field-cooled*; and **(3)** a progressive magnetization reversal when the system is *field-cooled*. Such behavior suggests an exotic ground state driven by an extraordinary coupling between spin, orbit and lattice degrees of freedom.

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