

Abstract Submitted
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Magnetic Phase Diagrams of Hexagonal RMnO_3 ($\text{R} = \text{Ho}, \text{Tm}, \text{Er}$) FEI YEN, BERND LORENZ, TcSUH, University of Houston, M.M. GOSPODINOV, Institute of Solid State Physics, Bulgarian Academy of Sciences, C.W. CHU, TcSUH, University of Houston, Lawrence Berkeley National Laboratory, Hong Kong University of Science and Technology — The magnetic phase transitions in the phase diagrams of RMnO_3 ($\text{R} = \text{Er}, \text{Tm}, \text{Ho}$) are correlated to changes in their dielectric properties proving the existence of strong spin-lattice coupling in these compounds. For the case when $\text{R} = \text{Tm}$ and Er , their Néel phase transition line decreases slightly with increasing external magnetic fields up to 7 Tesla and at low temperatures a phase transition line is detected at higher external fields which possibly merges with the Néel phase transition line at fields above 7 Tesla. For the case when $\text{R} = \text{Ho}$, a far more complex phase diagram was discovered including spin reorientation phase transitions and additional previously unknown phases with magnetic structures of which have yet to be explored.

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