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Magnetic properties of multiferroic hexagonal $LuFeO_3$ thin film WENBIN WANG, University of Tennessee & Oak Ridge National Laboratory, XIAOSHAN XU, Oak Ridge National Laboratory, JUN ZHAO, University of California, Berkeley, ZHENG GAI, WEI TIAN, Oak Ridge National Laboratory, JIAN SHEN, Fudan University — We present magnetic properties of multiferroic hexagonal $LuFeO_3$ single crystalline thin films grown on $Al_2O_3(0001)$ substrates using pulsed laser deposition(PLD) technique. Neutron diffraction and superconducting quantum interference device (SQUID) measurements suggest that the hexagonal $LuFeO_3$ thin film displays an antiferromagnetic order above room temperature and a second magnetic phase transition at lower temperature. The possible magnetic structures of this system are discussed.

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