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Low-temperature structure transition in hexagonal LuFeO3[1] XIAOSHAN XU, Oak Ridge National Laboratory,Bryn Mawr College,Fudan University, WENBIN WANG, University of Tennessee, Oak Ridge National Laboratory, XIAO WANG, Bryn Mawr College, LEYI ZHU, Argonne National Lab, JONGWOO KIM, PHILLIP RYAN, DAVID KEAVNEY, Argonne National Laboratory, THOMAS WARD, Oak Ridge National Laboratory, JIAN SHEN, Fudan University, XUEMEI CHENG, Bryn Mawr College — The structural change of h-$LuFeO_3$ films at low temperature has been studied using x-ray diffraction and x-ray absorption experiments. The results are analyzed using the displacements of three phonon modes that are related to the $P6_3/mmc$ to $P6_3cm$ structural transition. The data indicate that the in-plane motion of the Fe and apex oxygen are responsible for the observed anomaly in both x-ray absorption and diffraction experiments. This subtle structural transition may be an origin of the low temperature magnetic phase transition at T_R=130 K.

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