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Optical properties of ferrites through their magnetic ordering and spin-reorientation temperatures BRIAN HOLINSWORTH, Univ of Tennessee, Knoxville, CHARLES BROOKS, Penn State Univ, JULIA MUNDY, Cornell Univ, JUDY CHERIAN, STEPHEN MCGILL, National High Magnetic Field Laboratory, DARRELL SCHLOM, Cornell Univ, JANICE MUSFELDT, Univ of Tennessee, Knoxville — Iron oxides have attracted a great deal of attention due to their high magnetic ordering temperatures and semiconducting band gaps, the combination of which is very attractive for applications. In this work, we investigate band gap behavior in charge-ordered $LuFe_2O_4$ and its cousin $LuFeO_3$, showing that the latter is robust with temperature through the 130 K spin-reorientation and 440 K Neel transitions, and compare our findings with electronic structure calculations. Time permitting, we will discuss the spin polarized nature of the bands that form the leading edges of the gaps.

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