Abstract Submitted
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Optical properties of $LuFe_2O_4$[1] XIAOSHAN XU, TATIANA BRINZARI, JANICE MUSFELDT, Univeristy of Tennessee, Knoxville, MANUEL ANGST, DAVID MANDRUS, Oak Ridge National Laboratory — We measured the optical properties of single crystalline $LuFe_2O_4$ as a function of temperature and compared the results with recent electronic structure calculations. The 300 K optical gap is found to be $\sim$ 0.4 eV. The optical conductivity is very sensitive to temperature and shows a sharp transition at around 170 K structural transition. The Fe^{2+} to Fe^{3+} charge transfer transition (at approximately 1.5 eV) sharpens dramatically at low temperature, a trend that may be connected with the complex charge order of the material. Preliminary high energy magneto-dielectric data will be discussed.

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