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**THz investigation of non-Drude transport in the ferromagnetic metal SrRuO<sub>3</sub>** GRACE BOSSE, Y. LUBASHEVSKY, The Institute for Quantum Matter, Department of Physics and Astronomy, Johns Hopkins University, D. E. SHAI, Department of Physics, Laboratory of Atomic and Solid State Physics, Cornell University, C. ADAMO, Department of Materials Science and Engineering, Cornell University, D. G. SCHLOM, K. M. SHEN, Kavli Institute at Cornell for Nanoscale Science, N. P. ARMITAGE, The Institute for Quantum Matter, Department of Physics and Astronomy, Johns Hopkins University — While the highly correlated complex oxide perovskite ferromagnet SrRuO<sub>3</sub> has been studied for decades, interest remains in its unusual transport properties. In view of this, we present time-domain terahertz conductivity measurements taken from room temperature to 5K on a low disorder film of SrRuO<sub>3</sub>. Previous optical measurements have shown a deviation from Fermi liquid theory transport predictions in this material. We investigate these deviations in the context of both an extended Drude model analysis and the previously used fractional power law form. The high quality of our film, reflected in its large residual resistivity ratio, allows us to better isolate the inelastic scattering channels, which were likely masked by disorder in earlier studies. We also comment on the possible ferromagnetic resonance present in our optical data.

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