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Pressure induced metallic state in LaMnPO revealed via Infrared spectroscopy KIRK POST, Department of Physics, University of California San Diego, ALEX GONCHAROV, Geophysical Laboratory, Carnegie Institution of Washington, JACK SIMONSON, DANIEL MCNALLY, Department of Physics and Astronomy, Stony Brook University, ZHIPING YIN, Department of Physics and Astronomy, Rutgers University, BRIAN CHAPLER, Department of Physics, University of California San Diego, GABRIEL KOTLIAR, Department of Physics and Astronomy, Rutgers University, MEIGAN ARONSON, Department of Physics and Astronomy, Stony Brook University, DIMITRI BASOV, Department of Physics, University of California San Diego — We investigated the energy gap (E_{Gap}) of the antiferromagnetic insulator $LaMnPO_{1-x}F_x$ for x = 0.0, 0.04, as a function of temperature and pressure using infrared spectroscopy. The results obtained from these measurements show that the band gap shows no discontinuous change upon crossing the Neél temperature of 375 K and is therefore, likely unrelated to the antiferromagnetic ordering. Despite the resilience of the band gap to temperature, the band gap is dramatically reduced with the application of pressure and fully collapses by 28 GPa for both samples. These measurements confirm theoretical work predicting the collapse of the band gap with pressure.

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