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Incoherent Interplane Response of $\text{FeTe}_{0.55}\text{Se}_{0.45}$ S.J. MOON, Department of Physics, University of California, San Diego, La Jolla, California 92093, USA, C.C. HOMES, A. AKRAP, Z.J. XU, J.S. WEN, Z.W. LIN, Q. LI, G.D. GU, Condensed Matter Physics and Material Science Department, Brookhaven National Laboratory, Upton, New York 11973, USA, D.N. BASOV, Department of Physics, University of California, San Diego, La Jolla, California 92093, USA — We investigated the interplane c axis electronic response of iron-chalcogenide superconductor $\text{FeTe}_{0.55}\text{Se}_{0.45}$ using infrared spectroscopy. We found that the normal-state c axis electronic response of $\text{FeTe}_{0.55}\text{Se}_{0.45}$ is incoherent. The c axis optical conductivity does not display well-defined Drude response and it becomes further suppressed with decreasing temperature. This normal-state c axis optical response is remarkably similar to that of the mildly underdoped cuprates but is in sharp contrast to the coherent c axis response of $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$. From the analyses on the electronic anisotropy of various layered superconductors, we found a close correlation between the degree of the coherence in the c axis transport and the strength of the dissipation in the ab plane response.

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