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**Infrared phonon anomaly and magnetic excitations in single-crystal  $\text{Cu}_3\text{Bi}(\text{SeO}_3)_2\text{O}_2\text{Cl}$** <sup>1</sup> KEVIN H. MILLER, C. MARTIN, X. XI, Department of Physics, University of Florida, H. BERGER, Ecole Polytechnique Federal de Lausanne, G.L. CARR, Photon Sciences, Brookhaven National Laboratory, D.B. TANNER, Department of Physics, University of Florida — Infrared reflection as a function of temperature has been measured on the anisotropic single-crystal  $\text{Cu}_3\text{Bi}(\text{SeO}_3)_2\text{O}_2\text{Cl}$ . The complex dielectric function and optical properties along all three crystal axes of the orthorhombic cell were obtained via Kramers-Kronig analysis and by fits to a Drude-Lorentz model. Below 110 K drastic anomalies in the phonon spectrum (e.g., new modes and splitting of existing modes) are observed along all three crystal axes. Transmission in the terahertz region as a function of temperature has revealed magnetic excitations originating below the ferromagnetic ordering temperature,  $T_c=24$  K. The origin of the excitations in the magnetic state will be discussed in terms of their polarization and externally-applied magnetic field dependence.

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