

Abstract Submitted
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Infrared phonon dynamics of multiferroic BiFeO₃ single crystal¹ R.P.S.M. LOBO, CNRS-ESPCI, Paris, France, R.L. MOREIRA, Depto. Fisica, UFMG, Belo Horizonte, MG, Brazil, D. LEBEUGLE, D. COLSON, DSM/DRECAM/SPEC, CEA, Saclay, France — We discuss the first infrared reflectivity measurement on a BiFeO₃ single crystal between 5 K and room temperature. The 9 predicted *ab*-plane *E* phonon modes are fully and unambiguously determined. The frequencies of the 4 *A*₁ *c*-axis phonons are found. These results settle issues between theory and data on ceramics. Our findings show that the softening of the lowest frequency *E* mode is responsible for the temperature dependence of the dielectric constant, indicating that the ferroelectric transition in BiFeO₃ is soft-mode driven.

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