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Elastic properties of the titanate pyrochlore Tb₂Ti₂O₇¹

V. KEPPENS, Y. LUAN, Department of Materials Science and Engineering, The University of Tennessee, Knoxville, TN, A. MIGLIORI, J. BETTS, National High Magnetic Field Laboratory, Los Alamos, NM, H.D. ZHOU, National High Magnetic Field Laboratory, Tallahassee, FL, H.A. DABKOWSKA, B.D. GAULIN, Brockhouse Institute for Materials Research, McMaster University, Hamilton, ON — The presence of geometric frustration inhibits the formation of long-range spin ordering in Tb₂Ti₂O₇ even at very low temperatures, making this compound the prototype of a "spin liquid." We have initiated a study of the elastic properties of Tb₂Ti₂O₇ as a function of temperature (0.5-300 K) and magnetic field (0-15T) using Resonant Ultrasound Spectroscopy (RUS). All three elastic constants show a pronounced softening below 50 K, indicative of a possible structural transition at very low temperatures. Application of a magnetic field partially suppresses the elastic softening in this compound, suggesting that the magnetoelastic coupling plays a significant role in the spin liquid physics of Tb₂Ti₂O₇ at low tempera-

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Veerle Keppens Department of Materials Science and Engineering, The University of Tennessee, Knoxville, TN

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