Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Lattice dynamics of negative thermal expansion in ScF3 JASON HANCOCK, SAHAN HANDUNKANDA, University of Connecticut, AYMAN SAID, BOGDAN LEU, Argonne National Laboratory, VLADIMIR VORONOV, Kirenskii Institute of Physics, Siberia — We present inelastic scattering spectroscopy of single-crystalline samples of negative thermal expansion material ScF3 to investigate the dispersion of lattice excitations in this unusual system. The spectra reveal important mechanistic information regarding the negative thermal expansion and show that a large class of fluorides can accommodate unconventional lattice dynamics. The connections to nonlinear and distinctly quantum phenomena will be discussed.

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Date submitted: 14 Nov 2014 Electronic form version 1.4