Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Low-energy phonons and superconductivity in $Sn_{.8}In_{.2}Te$[1] GUANGYONG XU, Brookhaven National Laboratory, ZHIJUN XU, UC Berkeley, JOHN SCHNEELOCH, RUIDAN ZHONG, Brookhaven National Laboratory, J.A. RODRIGUEZ-RIVERA, L. HARRIGER, NIST Center for Neutron Research, ROBERT BIRGENEAU, UC Berkeley, GENDA GU, JOHN TRANQUADA, Brookhaven National Laboratory — We present neutron scattering measurements on low-energy phonons from a superconducting ($Tc = 2.7$ K) $Sn_{.8}In_{.2}Te$ single crystal sample. The longitudinal acoustic phonon mode and one transverse acoustic branch have been mapped out around the (002) Bragg peak for temperatures of 1.7 K and 4.2 K. We observe a substantial energy width of the transverse phonons at energies comparable to twice the superconducting gap; however, there is no change in this width between the superconducting and normal states. We also confirm that the compound is well ordered, with no indications of structural instability.

[1]This work is supported by the Office of Basic Energy Sciences, DOE.

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Date submitted: 14 Nov 2014 Electronic form version 1.4