Neutron Scattering Study of the Temperature-Dependent Phonon Spectra of AgSbTe$_2$ 1 JIE MA, OLIVIER DELAIRE, ANDREW MAY, MICHAEL MCGUIRE, BRIAN SALES, OLIVIER GOURDON, ASHFIA HUQ, DOUGLAS ABERNATHY, MATTHEW STONE, Oak Ridge National Laboratory, PO Box 2008, Oak Ridge, TN 37831, USA, OAK RIDGE NATIONAL LABORATORY, PO BOX 2008, OAK RIDGE, TN 37831, USA COLLABORATION — The thermoelectric material AgSbTe$_2$ has attracted much attention due to its simple rocksalt structure, high thermoelectric figure-of-merit, and its extremely low thermal conductivity in bulk samples. Previous theoretical studies have suggested that phonons can be scattered by anharmonicity (phonon-phonon coupling) and nano-defects in AgSbTe$_2$. However, systematic measurements of phonons in this compound have not been available. We report our results of detailed time-of-flight neutron scattering measurements, as a function of temperature, and departure from stoichiometry. The temperature dependence of the phonon density-of-states is discussed, and compared with the reported thermal conductivity in this system.

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