Heat transport in the frustrated spin-ladder compound, BiCu$_2$PO$_6$

NARAYAN PRASAI, ALWYN REBELLO, JOSHUA L. COHN, University of Miami, SUELI H. MASUNAGA, JOHN J. NEUMEIER, Montana State University — We report measurements of thermal conductivity ($\kappa$) in the range $0.4 \, K \leq T \leq 300 \, K$ for single-crystal BiCu$_2$PO$_6$, a recently discovered frustrated 2-leg spin-ladder compound. For heat flow both along and transverse to the spin ladders, $\kappa$ exhibits a broad maximum near 60 K, coinciding with a similar maximum reported in the magnetic susceptibility, and consistent with resonant phonon scattering from spin excitations with an energy scale 40-60 K. Anisotropy in $\kappa$, evidence for a spin contribution at low temperatures, and the influence of magnetic field will be discussed.

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