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Lattice thermal conductivity of $AgSbTe_2$ DONALD MORELLI, Michigan State University, VLADIMIR JOVOVIC, SURAJ THIAGARAJAN, JOSEPH HEREMANS, The Ohio State University — The lattice thermal conductivity of high-quality crystals of $AgSbTe_2$ is nearly temperature-independent from 80 to 300 K, and has a value of 0.65±0.05 W/mK. This value corresponds to the minimum possible thermal conductivity, where the phonon mean free path equals the interatomic distance. The result is analyzed in terms of scattering mechanisms: Umklapp and Normal phonon-phonon scattering processes are the dominant mechanism. It is, to our knowledge, the first system in which intrinsic phonon-phonon interactions limit the lattice thermal conductivity to such a low value. This in turn results from the extreme anharmonicity of the chemical bonding in $AgSbTe_2$, which gives rise to one of the highest Grüneisen parameter of any solid. The phonon-phonon scattering rate being a function of the square of the latter, the lattice thermal conductivity is also one of the lowest.

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