

Abstract Submitted
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Bilayer Thermometers for Third Sound Detection¹ J.D. CUMMINGS, R.B. HALLOCK, Univ. of Mass. Amherst — We present results from an experiment to develop bilayer metallic films of aluminum and gold as superconducting transition edge thermometers for the detection of third sound waves. Generally, traditional transition edge thermometers operate in a temperature range that is dictated by the choice of superconductor, e.g. $\sim 1.5\text{K}$ for aluminum and $\sim 0.8\text{K}$ for zinc, which is tunable over a modest range by application of a magnetic field or bias current. Bilayers offer the option of selecting the optimal transition temperature for an experiment to be done by adjusting the ratio of normal metal (Au) thickness to the superconductor (Al) thickness. This allows a detector to be designed to operate at any temperature below the transition temperature for the pure superconducting film. We will present transition edge data for such thermometers and document their utility for third sound detection.

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