

Abstract Submitted  
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**Fabrication of robust superconducting granular aluminum/palladium bilayer microbolometers with sub-nanosecond response**<sup>1</sup> THOMAS WILSON, Marshall University — We provide a convenient recipe for fabricating reliable superconducting microbolometers as acoustic phonon detectors with sub-nanosecond response, using image-reversal optical lithography and dc-magnetron sputtering, and our recipe requires no chemical or plasma etching. Our approach solves the traditional problem for granular aluminum bolometers of unreliable (i.e., non-Ohmic) electrical contacts by sequentially sputtering the granular aluminum film and then a palladium capping layer. We use dc calibration data, the method of Danilchenko et al., and direct nanosecond-pulsed photoexcitation to obtain the microbolometer's characteristic current, thermal conductance, characteristic relaxation time, and heat capacity. We also demonstrate the use of the deconvolution algorithm of Edwards et al., to obtain the phonon flux in a heat pulse experiment with nanosecond resolution.

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