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Graphene-Superconductor based Bolometers HELI VORA, PIRANAVAN KUMARAVADIVEL, BENT NIELSEN, XU DU, Department of Physics & Astronomy, Stony Brook University — Due to its small volume and linear energy dependence of electron density of states, graphene has very low electronic heat capacitance compared to what is found in metals with achievable volume. This makes it a promising material for applications requiring bolometric sensing of radiation with a fast response without compromising sensitivity. Here we report fabrication of graphene-superconductor tunnel junctions and characterization of their bolometric response. When radio frequency radiation is shone onto the junction, the electrons in graphene heat up and dynamic resistance within the superconducting gap changes. The relation between absorbed power and temperature rise is used to characterize heat conductance and thermal noise equivalent power.

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