Abstracts

Niobium Microbolometers for Far-Infrared Detection (Short Papers)

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Microbolometers have been fabricated using a thin niobium film as the detector element. These detectors operate at room temperature, are impedance matched to planar antennas, and are suitable for broad-band use at far-infrared wavelengths. We have achieved responsivities of up to 21 V/W at a bias of 6.4 mA, and electrical noise equivalent powers (NEP) of as low as 1.1 x 10/sup-10/ W/radic HZ at 1 kHz at a bias of 3.6 mA. At this bias, the detectors are 1/f -noise limited below 1 kHz and are Johnson noise limited above 10 kHz. The 1/f noise in nV/radic Hz increases approximately linearly with bias with a typical level of 0.39 I(mA) over radic f(kHz) This level of 1/f noise is approximately a factor of 7 below the best reported for bismuth microbolometers.

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