

Passive terahertz imaging with superconducting antenna-coupled microbolometers

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The terahertz region of the electromagnetic spectrum lies in between the microwave and infrared regions of the electromagnetic spectrum. Often this region is defined as $0.3 \text{ THz} < f < 3 \text{ THz}$, or $100 \text{ }\mu\text{m} < \lambda < 1 \text{ mm}$. It is in this spectral region that the generation and detection of electromagnetic radiation is still in its infancy in terms of output power, pixel count and sensitivity. There are however several intriguing applications foreseen for e.g. imaging detectors, such as stand-off security screening of concealed weapons and explosives, as well as medical imaging applications for screening of skin conditions. Also, as this spectral region contains a myriad of spectral lines associated with the rotational and torsional motion of molecules, there is an ever increasing interest for novel applications in remote biosensing.

In this talk I will discuss the detection of THz radiation with superconducting microbolometers, and their application to the passive stand-off detection of weapons and explosives hidden underneath clothing.