Abstracts

Millimeter- and Submillimeter-Wave Detection by Paramagnetic Materials

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Due to a lack of powerful signal sources in the millimeter- and submillimeter -wavelength range, a sensitive detector is an essential requirement for work in this frequency band. Adaptations of microwave and optical devices to this wavelength region have many limitations. One means of circumventing the problems associated with operation in this region is to convert the short wavelength radiation to lower frequencies where low noise detection techniques are available. This paper describes the theoretical and experimental evaluation of a downconverter which utilizes paramagnetic materials. Using materials with appropriate zero field splittings this device should be operable over the millimeter-through far-infrared-wavelength range.

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