Abstracts

Optically Controlled Quasi-Optical Local Oscillator Injection for a 100 GHz SIS Imaging Receiver

G.F. Delgado. "Optically Controlled Quasi-Optical Local Oscillator Injection for a 100 GHz SIS Imaging Receiver." 1995 Transactions on Microwave Theory and Techniques 43.9 (Sep. 1995, Part II [T-MTT] (Special Issue on Microwave and Millimeter Wave Photonics)): 2364-2369.

We present a novel approach to the problem of quasi-optical LO injection in a 100 GHz SIS imaging receiver. The use of a specially engineered molecular beam epitaxy material as an all-optical millimeter wave modulator is presented. This optically controlled modulator, used together with a kinoform to generate and control an array of Gaussian beams, is an efficient, completely solid-state, rugged and physically small solution. The working principle of the optically controlled modulator lies in the fact that the conductivity of a semiconductor can be changed by the generation of free carriers under photonic excitation, thus changing its refractive index.

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