# Abstracts

## Homodyne and Heterodyne Studies of GaAs and InP Millimeter-Wave Gunn Mixers (Short Papers)

*F.R. Pantoja. "Homodyne and Heterodyne Studies of GaAs and InP Millimeter-Wave Gunn Mixers (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1249-1253.*

Detailed investigations of both homodyne and heterodyne self-oscillating mixers have been conducted. The active devices were GaAs and InP Gunn diodes, operating in the frequency region of 94 GHz. In addition to the fourfold comparisons of GaAs and InP homogyne and heterodyne mixers, finer comparisons were made with recently developed diode structures. The InP diodes were of two types either n/sup +/ -n-n/sup +/ sandwich, or n-n/sup +/ with a current-limiting cathode contact. The GaAs diodes were of n/sup +/ -n-n/sup +/ sandwich structure. Sensitivity of --80 dBm (homodyne) at a few hundred hertz beat frequency was obtained with InP n/sup +/ -n-n/sup +/ diodes. These results were of the order of 6 dB better than those with GaAs n/sup +/ -n-n/sup +/ and InP n-n/sup +/ diodes. With heterodyne, the InP n/sup +/ -n-n/sup +/ gave sensitivity approaching -90 dBm with intermediate frequency at 70 MHz and an IF bandwidth of 33 MHz, which constituted a superiority of 10 dB over the other two diode types.

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