Terahertz Emitters, Receivers, and Applications III
SPIE Optical Engineering + Applications
12-16 August 2012, San Diego, United States
Proceedings volume 8496
pag. 35-44

Resonant-tunnelling diodes for THz applications

Manijeh Razeghi, Alexei N. Baranov, Henry O. Everitt, John M. Zavada, Tariq Manzur

https://doi.org/10.1117/12.930490

Abstract

We investigate experimentally resonant-tunnelling-diode (RTD) oscillators, which are based on RTDs with heavily doped collector. We demonstrate that such RTD oscillators can work at frequencies, which are far beyond the limitations imposed by resonant-state lifetime and relaxation time. Exploiting further such RTDs, we have achieved the record operating frequency of 1.1 THz and show that substantially higher frequencies should be also achievable with RTD oscillators. RTD oscillators are extremely compact (less than a square millimeter) room-temperature sources of coherent cw THz radiation. Such sources should enable plenty of real-world THz applications.