Novel resonant-tunneling-diode terahertz oscillators and applications

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Abstract

The recent progress in resonant-tunneling diode (RTD) THz oscillators and applications is reviewed. For high-frequency and high output power, RTD oscillators integrated with cylindrical and rectangular cavities have been developed. Structure simplified RTD oscillators for easy device fabrication and good uniformity were proposed and fabricated. This simple structure has an extensibility for large-scale array, active metamaterial, and beam forming function. Novel THz radar systems using RTD oscillators were proposed, and a precise distance measurement and a three-dimensional imaging were demonstrated.