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Title

Nonlinear quantum mode of terahertz electromagnetic wave amplification in resonant tunneling heterostructures

Source

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Abstract

An analysis of high-frequency properties of the resonant tunneling diode (RTD) in a strong microwave electromagnetic field showed that the high-frequency current response increasing with the microwave power significantly more rapidly saturates out in the case of classical amplification mode, than in the case of "quantum" amplification mode. This makes the "quantum" mode even more attractive in comparison with the classical mode from the viewpoint of the possibility of amplification and generation in the range of subterahertz and terahertz frequencies and offers new opportunities to advance towards these frequencies.