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摘要: The gain spectrum of a terahertz quantum cascade laser is analyzed by a nonequilibrium Green's functions approach. Higher harmonics of the response function were retrievable, providing a way to approach nonlinear phenomena in quantum cascade lasers theoretically. Gain is simulated under operation conditions and results are presented both for linear response and strong laser fields. An iterative way of reconstructing the field strength inside the laser cavity at lasing conditions is described using a measured value of the level of the losses of the studied system. Comparison with recent experimental data from time-domain-spectroscopy indicates that the experimental situation is beyond linear response. (C) 2012 American Institute of Physics. [http://dx.doi.org/ 10.1063/1.4767373]
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