Theory of nanolaser devices: Rate equation analysis versus microscopic theory (30/11/2018)

Theory of nanolaser devices: Rate equation analysis versus microscopic theory
A rate equation theory for quantum-dot-based nanolaser devices is developed. We show that these rate equations are capable of reproducing results of a microscopic semiconductor theory, making them an appropriate starting point for complex device simulations of nanolasers. The input-output characteristics and the modulation response are investigated and the limits of the rate equation approach are discussed.

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