Laser cooling with induced radiation

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Abstract

Theoretical model is constructed for radiation balanced solid state lasers with up-conversion cooling effect. Kinetic equations are derived for such lasers in the framework of nonequilibrium statistical operator method and estimations are made for limiting temperatures of generation. Calculations are performed also for radiation balanced pulsed lasers where excess heat is removed by induced radiation.

Keywords

Kinetic equations, Laser cooling, Nonequilibrium statistical operator, Radiation balanced solid state lasers