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Title:Terahertz beat frequency generation from two-mode lasing operation of coupled microdisk laser

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Abstract:We propose a coupled microdisk laser as a compact and tunable laser source for the generation of a coherent continuous-wave terahertz radiation by photomixing. Using the Schrödinger-Bloch model including the nonlinear effect of active medium, we find single-mode and two-mode lasings depending on the pumping strength. We explain the transitions of lasing modes in terms of resonant modes that are the solutions of the Schrödinger-Bloch model without active medium and nonlinear interaction. In particular, a two-mode lasing is shown to generate a terahertz oscillating frequency originating from the light heating of two nearly degenerated resonant modes with different symmetries.

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Inspec controlled terms:laser modes - microdisc lasers - optical pumping - Schrodinger equation - terahertz wave generation

Uncontrolled terms:coupled microdisk laser - terahertz beat frequency generation - two-mode lasing operation - compact laser source - tunable laser source - coherent continuous-wave terahertz radiation - photomixing - Schrodinger-Bloch model - active medium - single-mode lasing operation - pumping strength - nonlinear interaction - light heating - nearly degenerated resonant modes

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