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Study of temperature- dependent modulated VCSEL dynamics

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Abstract

In this work the nonlinear dynamics of Vertical Cavity Surface Emitting Laser (VCSEL) is studied. The rate equations describing VCSEL dynamics are solved numerically. The simulation shows that the directly modulated VCSEL output power and its modulation response are sensitive to the injection current, the modulation signal amplitude and frequency. The study proves that VCSEL dynamics is strongly affected by the variation of temperature.

Keywords: VCSEL; semiconductor laser; frequency modulation; thermal effect

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