

circuit modeling of transient the radiation quantum dot vertical cavity semiconductor lasers (VCSEL) with regard to the effects of noise and thermal effects

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Abstract: In this thesis, after presenting the relationship between modeling of vertical irradiation lasers (VCSEL), a quantum-based point for an orbital model was proposed for it, and then, in the transient analysis section, the dependence of the threshold density on the structural characteristics of the laser and the temperature of the active zone and We have investigated the effects of noise. Due to the inequality of quantum dots in shape and size, non-homogeneous broadening has benefited the important parameters and its effect on threshold density, spectral broadening has been investigated. Finally, we investigated the effect of self-control phenomenon on threshold density and maximum laser output power.

Keywords : Keywords: Quantum Point Based VCSEL, Transient Analysis, Threshold Density, Active Temperature, and Noise Effects.

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