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Performance Analysis of Quantum cascaded Lasers[1] MOHAMED S. EL-TOKHY, IMBABY I. MAHMOUD, M.B. EL-MASHADE — Improving the performance of the QCL through block diagram as well as mathematical models is the main scope of this paper. In order to enhance the performance of the proposed device, the mathematical model parameters are used in a reliable manner in such a way that the optimum behavior was achieved. These parameters play the central role in specifying the optical characteristics of the considered laser source. Since threshold current density J_{th}, represents a limiting factor in the QCLs operation, it is of importance to reduce its value and in the same time to have a large amount of radiated power, where increasing the amount of radiated power and decreasing the threshold current density represent the main hopping process that can be predicted from the behavior of quantum laser devices. It was found that there is a good agreement between the calculated values from our mathematical model and those obtained with VisSim and experimental results. These demonstrate the strength of implementation of both mathematical and block diagram models.

[1]NRC, EAEA, Egypt

Mohamed S. El-Tokhy

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