

Chaos Communication with Quantum Dots Lasers under the Influence of Multiple Feedback

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In this paper, we show the results on the dynamical behaviour of semiconductor laser with quantum dots under the influence of multiple feedback from external optical cavities. We find the optimal conditions for chaotic operation. The structure of the device consists of a laser with quantum dots coupled with multiple external cavities. The dynamic behavior of the laser depends on the influence of optical feedback from each external cavity. We analyze the dynamical behaviour of the device using the rate equations model with Lang – Kobayashi type of feedback. Two coupled lasers can operate in synchronization mode. Under the synchronization, we apply the chaos modulation technique. Finally, we present examples of message encoding and decoding with high bit rate.