035

A single laser diode for all-optical flip-flop operation

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Communication networks are more and more implemented in the optical domain to avoid the time-consuming electro-optical conversions. Therefore there is a strong need for all-optical memory elements which can temporarily store routing information. These devices are called all-optical flip-flops and can be implemented as bistable elements that are able to switch between the two stable states by injecting optical pulses. Distributed feedback lasers are one of the main building blocks of optical communication networks and are found to be bistable when external light is injected. The carrier distribution inside the laser cavity changes drastically because of the injection of external light, ultimately causing the laser to switch off. For a certain range of injection powers the state in which the laser is found (on or off) can be changed by injecting pulses at either side of the laser.

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Influence of a capping layer on the light outcoupling efficiency in top emission OLEDs

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Organic light-emitting devices (OLEDs) are gaining interest for application in displays and lighting. In a top emission OLED the light is emitted through the thin metallic cathode without passing through the substrate. The advantage of this solution is that also cheaper, flexible substrates can be used instead of glass. Due to the limited transmission of the metallic cathode, the outcoupling of light in a top emission OLED is typically lower than in a bottom emission OLED. In this work, the enhancement of outcoupling efficiency in top emission OLEDs is investigated. For this we use a dielectric capping layer with different refractive index and optimize its thicknesses and the thickness of the organic layers for the best light outcoupling. We model the emitters as dipole antennas and we take into account the microcavity effects that appear in such thin structures.

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