Generator of Ultrashort Optical Pulses for Time Division Multiplexing

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Abstract

The performance of a device based on modified injection-locking techniques is studied by means of numerical simulations. The device incorporates master and slave configurations, each one with a DFB laser and an electroabsortion modulator (EAM). This arrangement allows the generation of high peak power, narrow optical pulses according to a periodic or pseudorandom bit stream provided by a current signal generator. The device is able to considerably increase the modulation bandwidth of free-running gain-switched semiconductor lasers using multiplexing in the time domain. Opportunities for integration in small packages or single chips are discussed.