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Title:All-optical pseudorandom binary sequence generator with TOAD-based D flip-flops
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Abstract:An all-optical pseudo random binary sequence (PRBS) generator is designed using serially interconnected discrete Terahertz Optical Asymmetric Demultiplexer (TOAD)-based D flip-flops in a configuration exactly like the standard electronic setup. The performance of the circuit is evaluated through numerical simulation, which confirms its feasibility in terms of the choice of the critical parameters. The proposed scheme has been theoretically demonstrated for a 3-bit and 7-bit degree PRBS but can be extended to higher order by means of additional TOAD-based D flip-flops. Thus it can constitute an efficient solution for implementing all-optically a PRBS in an affordable, controllable and realistic manner.