

Abstract Submitted
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Spike Bursts from an Excitable Optical System¹ JOSE R RIOS LEITE, EDISON J ROSERO, WENDSON A S BARBOSA, Depto. Fisica- Univ. Fed. de Pernambuco-Recife, JORGE R TREDICCE, INLN-Univ de Nice-Sophie Antipolis -France — Diode Lasers with double optical feedback are shown to present power drop spikes with statistical distribution controllable by the ratio of the two feedback times. The average time between spikes and the variance within long time series are studied. The system is shown to be excitable and present bursting of spikes created with specific feedback time ratios and strength. A rate equation model, extending the Lang-Kobayashi single feedback for semiconductor lasers proves to match the experimental observations. Potential applications to construct network to mimic neural systems having controlled bursting properties in each unit will be discussed.

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