Coherence enhanced intermittency in an optically injected semiconductor laser

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Abstract

We report on the experimental observation of coherence enhancement of noise-induced intermittency in a semiconductor laser subject to optical injection from another laser at the boundary of the frequency-locking regime. The intermittent switches between locked and unlocked states occur more regularly at a certain value of the injecting laser pump current. A shape of probability distribution of the experimental inter-spike-interval fluctuations is used to quantitatively characterize the intermittent behavior.