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Title:	Unraveling the phase-amplitude coupling modulation in a delay-coupled diode lasers functionality
Authors:	Sinha, Sudeshna (/jspui/browse?type=author&value=Sinha%2C+Sudeshna)
Keywords:	Semiconductor lasers Power spectra Modulation Phase-amplitude coupling
Issue Date:	2017
Publisher:	Society of Photo-Optical Instrumentation Engineers
Citation:	Proceedings of SPIE - The International Society for Optical Engineering, 10086.
Abstract:	We numerically investigate the effect of phase-amplitude coupling modulation on power spectra in semiconductor lasers subject to optical injection in a face to face configuration, when a non-negligible injection delay time is taken into account. We find that as phase-amplitude coupling factor α varies, the system goes through a sequence of phase transactions between In-phase locking states to anti-phase locking states via phase-flip bifurcation. Moreover, we observed the signature of frequency discretization (Frequency Island) and uncovered the physical mechanism for the existence of multi-stability near the phase transitions regimes. Within the windows between successive anti-phases to in-phase locking regions, optical injection induced modulation in α , unveiling a remarkable universal feature in the various dynamics of coupled lasers system which could be useful in controlling the chirp or pulse repetition rate of a photonic integrated compact device with the aid of phase control.
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