



Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali (/jspui/)

/ Publications of IISER Mohali (/jspui/handle/123456789/4)

/ Research Articles (/jspui/handle/123456789/9)

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/2831>

Title:	Control of dynamical instability in semiconductor quantum nanostructures diode lasers: Role of phase-amplitude coupling
Authors:	Kumar, Pramod (/jspui/browse?type=author&value=Kumar%2C+Pramod)
Keywords:	Numerically Dynamics Nonlinear Laser systems
Issue Date:	2013
Publisher:	Springer Link
Citation:	European Physical Journal: Special Topics, 222, pp.813–820.
Abstract:	We numerically investigate the complex nonlinear dynamics for two independently coupled laser systems consisting of (i) mutually delay-coupled edge emitting diode lasers and (ii) injection-locked quantum nanostructures lasers. A comparative study in dependence on the dynamical role of α parameter, which determine the phase-amplitude coupling of the optical field, in both the cases is probed. The variation of α lead to conspicuous changes in the dynamics of both the systems, which are characterized and investigated as a function of optical injection strength η for the fixed coupled-cavity delay time τ . Our analysis is based on the observation that the cross-correlation and bifurcation measures unveil the signature of enhancement of amplitude-death islands in which the coupled lasers mutually stay in stable phase-locked states. In addition, we provide a qualitative understanding of the physical mechanisms underlying the observed dynamical behavior and its dependence on α . The amplitude death and the existence of multiple amplitude death islands could be implemented for applications including diode lasers stabilization.
Description:	Only IISERM authors are available in the record.
URI:	https://link.springer.com/article/10.1140/epjst/e2013-01884-1 (https://link.springer.com/article/10.1140/epjst/e2013-01884-1) http://hdl.handle.net/123456789/2831 (http://hdl.handle.net/123456789/2831)
Appears in	Research Articles (/jspui/handle/123456789/9)
Collections:	

Files in This Item:

File	Description	Size	Format
Need to add pdf.odt (/jspui/bitstream/123456789/2831/1/Need%20to%20add%20pdf.odt)		8.63 kB	OpenDocument Text

[View/Open \(/jspui/bitstream/123456789/2831/1/Need%20to%20add%20pdf.odt\)](#)

[Show full item record \(/jspui/handle/123456789/2831?mode=full\)](#)

[Statistics \(/jspui/handle/123456789/2831/statistics\)](#)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.