

1. Record Nr.	UNINA9910483228703321
Autore	Aluf Ofer
Titolo	Advance elements of laser circuits and systems : nonlinear applications in engineering // Ofer Aluf
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-64103-1
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (XX, 1225 p. 140 illus., 49 illus. in color.)
Disciplina	621.366
Soggetti	Lasers Nonlinear theories Electronic circuits Speech processing systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Laser products descriptions -- Laser One dimensional flow and bifurcation -- Laser Negative Differential Resistance (NDR) circuits as a dynamical system, Laser circuits in topological structures, Laser circuits behavior investigation based on Eigen solutions and Eigenvalues characteristics and bifurcation -- Laser circuits two dimensional flow -- laser circuits with time delay parameters -- Laser circuits with time delay parameters Eigen solutions and Eigenvalues characteristics and bifurcation -- Laser circuits chaos characteristics -- Lasers bifurcation behaviors – Investigation, comparison and conclusion.
Sommario/riassunto	This book on Advance Elements of Laser circuits and systems Nonlinearity applications in engineering addresses two separate engineering and scientific areas, and presents advanced analysis methods for Laser circuits and systems that cover a broad range of engineering and scientific applications. The book analyzed Laser circuits and systems as linear and nonlinear dynamical systems and there limit cycles, bifurcation, and limit cycle stability by using nonlinear dynamic theory. Further, it discussed a broad range of bifurcations related to Laser systems and circuits, starting from laser system differential equations and their bifurcations, delay differential

equations (DDEs) are a function of time delays, delay dependent parameters, followed by phase plane analysis, limit cycles and their bifurcations, chaos, iterated maps, period doubling. The Laser circuits and systems are Laser diode circuits, MRI system Laser diode circuitry, Electron-photon exchanges into VCSEL, Ti: Sapphire laser systems, Ion channel and long-wavelength lasers, Solid state lasers, Solid state laser controlled by semiconductor devices, microchip solid-state laser, Q-switched diode-pumped solid-state laser, Nd:YAG, Mid-Infrared and Q-switched microchip lasers, Gas laser systems, copper vapor laser (CVL) circuitry, Dual-wavelength laser systems, Dual-wavelength operation of a Ti:sapphire laser, Diode-pumped Q-switched Nd:YVO₄ yellow laser, Asymmetric dual quantum well lasers, Tm³⁺-doped silica fibre lasers, Terahertz dual-wavelength quantum cascade laser. The Book address also the additional areas, Laser X guiding system, Plasma diagnostics, Laser Beam shaping, Jitter and crosstalk, Plasma mirror systems, and High power Laser/Target diagnostic system optical elements. The book is unique in its emphasis on practical and innovative engineering and scientific applications. All conceptual Laser circuits are innovative and can be broadly implemented in many engineering applications. The dynamics of Laser circuits and systems provides several ways to use them in a variety of applications covering wide areas. This book is aimed at electrical and electronics engineers, students and researchers in physics as well. It is also aimed for research institutes in lasers and plasma physics and gives good comprehensive in laser and plasma systems. .
