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Nota di contenuto	Nonlinear Laser Dynamics; Contents; Preface; List of Contributors; Part I Nanostructured Devices; 1 Modeling Quantum-Dot-Based Devices; 1.1 Introduction; 1.2 Microscopic Coulomb Scattering Rates; 1.2.1 Carrier-Carrier Scattering; 1.2.2 Detailed Balance; 1.3 Laser Model with Ground and Excited States in the QDs; 1.3.1 Temperature Effects; 1.3.2 Impact of Energy Confinement; 1.3.3 Eliminating the Excited State Population Dynamics; 1.4 Quantum Dot Switching Dynamics and Modulation Response; 1.4.1 Inhomogeneous Broadening; 1.4.2 Temperature-Dependent Losses in the Reservoir 1.4.3 Comparison to Experimental Results1.5 Asymptotic Analysis; 1.5.1 Consequences of Optimizing Device Performance; 1.6 QD Laser with Doped Carrier Reservoir; 1.7 Model Reduction; 1.8 Comparison to Quantum Well Lasers; 1.9 Summary; Acknowledgment; References; 2 Exploiting Noise and Polarization Bistability in Vertical-Cavity Surface-Emitting Lasers for Fast Pulse Generation and Logic Operations; 2.1 Introduction; 2.2 Spin-Flip Model; 2.3 Polarization Switching; 2.4 Pulse Generation Via Asymmetric Triangular Current Modulation; 2.5

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Sommario/riassunto

A distinctive discussion of the nonlinear dynamical phenomena of semiconductor lasers. The book combines recent results of quantum dot laser modeling with mathematical details and an analytic understanding of nonlinear phenomena in semiconductor lasers and points out possible applications of lasers in cryptography and chaos control. This interdisciplinary approach makes it a unique and powerful source of knowledge for anyone intending to contribute to this field of research. By presenting both experimental and theoretical results, the distinguished authors consider solitary lase
