Special Issue

Nonlinear Dynamics of Semiconductor Lasers and Their Applications

Message from the Guest Editors

Semiconductor lasers are key components in many optical systems due to their advantages. It is well known that semiconductor lasers under external perturbations such as optical injection, optical feedback or delayed coupling can exhibit a large variety of complex dynamical behaviors. Nowadays, cutting-edge engineering applications based on the complex dynamics of diode lasers are being conducted in areas such as optical communications, optical signal processing, encoded communications, neuro-inspired ultra-fast optical computing devices, microwave signal generation, RADAR and LIDAR applications, biomedical imaging, and broadband spectroscopy. This Special Issue focuses on theoretical and experimental advances in the nonlinear dynamics of semiconductor lasers subject to different types of external perturbations. -Laser dynamics and stability of semiconductor lasers: chaos, bifurcations, extreme optical pulses, and periodic dynamics, including quantum cascade lasers, quantum well, wire, dot, and dash lasers, VCSELs, micro-cavity lasers, nano-lasers, semiconductor ring lasers and lasers integrated on photonic chips. - Applications based on nonlinear dynamics of laser diodes.

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