

## Special Issue on **Advances on Nonlinear Dynamics of Semiconductor Lasers and Applications**

# CALL FOR PAPERS

Regarding physical curiosity, test beds for complex dynamical behavior, and fuel for cutting-edge engineering technologies, the nonlinear dynamics of semiconductor lasers has been an extremely active field of research in the last ten years. Now, the research lies at the frontier of a large variety of engineering applications in neuroinspired computing, microwave photonics, cryptography, and many others. Thus, it becomes challenging to follow the overall progress in all these different areas. Nevertheless, the core of the physical system remains the laser, which opens a way to extensive cross-fertilization and synergies between different scientific fields especially on the mathematical aspects.

In this context, this special issue aims at proposing a snapshot of the current state of the art on the mathematical work and prospects in the field of semiconductor laser dynamics and especially mathematical efforts relevant to engineering. The goal is to provide a clear overview of the overall theoretical progress on both fundamental and more applied aspects in this domain. We therefore particularly welcome studies connecting different facets of the field within the same framework.

The focus of this special issue lies on the mathematical modelling and theoretical aspects of nonlinear laser dynamics, including but not limited to ordinary and partial differential equations, stochastic processes, and nonlinear analysis.

Potential topics include but are not limited to the following:

- ▶ Semiconductor laser dynamics and nonlinear dynamics, including VCSELs, quantum-wire, dot and quantum cascade lasers, nanolasers, lasers on silicon, and other novel gain materials
- ▶ Physics of semiconductor laser dynamics, including periodic and aperiodic oscillations, bifurcations, and chaos.
- ▶ Applications of semiconductor laser dynamics, including control, synchronization, all-optical processing, optical communication, and Lidar
- ▶ Ultrafast laser dynamics, including short-pulsed and mode-locked lasers
- ▶ Applications of ultrafast laser dynamics, including generation, detection, shaping, and other related optical processing

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/mpe/ndsl/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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### **Submission Deadline**

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