

Nonlinear Dynamics in Semiconductor Lasers 2025

Weierstrass Institute for Applied Analysis and Stochastics

Erhard-Schmidt Lecture Room, Mohrenstr. 39, 10117 Berlin



June 16 | Monday

June 17 | Tuesday

June 18 | Wednesday

8:30 - 8:50 Registration

8:50 - 9:00 Welcome

9:00 - 9:25 Svetlana Gurevich
Coherent pulse interactions in mode-locked semiconductor lasers

9:25 - 9:50 Julien Javaloyes
Time Crystals in Active Mode-Locked Lasers

9:50 - 10:15 Kamel Merghem
Self-injected quantum-dash mode locked lasers for frequency comb generation

10:15 - 10:30 Navia Kleemann
Competitive Dynamics of Self Mode-Locking and Passive Mode-Locking in QD and QW Lasers

10:30 - 11:00 Coffee Break

11:00 - 11:25 Cristina Rimoldi
Near field and spectral study of four-wave mixing in multimode VCSELs

11:25 - 11:50 Deb Kane
Coherence Collapse – How collapsed?

11:50 - 12:15 Cristina Masoller
Experimental study of the coherence of the light emitted by a semiconductor laser with optical feedback and current modulation

12:15 - 12:30 Elias Koch
Impact of slow thermal effects on dynamics of vertically emitting Kerr microcavities

12:30 - 14:00 Lunch Break

14:00 - 14:25 Sergei K. Turitsyn
Extreme learning machine using semiconductor optical amplifier

14:25 - 14:50 Lina Jaurigue
Resonance and delay effects in delay-based photonic reservoir computing

14:50 - 15:15 Kathy Lüdge
Photonic Reservoir Computing with Quantum Dot Lasers: Impact of Charge-Carrier Dynamics

15:15 - 15:45 Coffee Break

15:45 - 16:10 Dmitry V. Skryabin
Hyper-parametric and $\chi(2)$ solitons in microresonators

16:10 - 16:35 Tobias Herr
Frequency combs from nanostructured microresonators

16:35 - 17:00 Darko Zibar
Subspace tracking: a novel measurement method to test the standard phase noise model of optical frequency combs

17:00 - 17:15 Jesús Yelo-Sarrión
A time-delayed renewal model for Kerr frequency combs

17:15 - 20:00 Poster Session
WIAS main building (4th floor)
Room 405/406

See right column for list of posters.

9:00 - 9:25 Stephan Reitzenstein

Single-quantum-dot devices for photonic quantum technologies: Design, deterministic nanofabrication, and application perspectives

9:25 - 9:50 Gian Luca Lippi

Scaling Effects in Semiconductor Lasers: The Impact of Cavity Size on Dynamics and Detectability

9:50 - 10:15 Yi Yu

Simulating Nanolasers with Extreme Dielectric Confinement

10:15 - 10:30 Monty Drechsler

Quantum fluctuation in mode-locked single-section semiconductor quantum dot lasers

10:30 - 11:00 Coffee Break

11:00 - 11:25 Frank Jahnke

Optical Gain in Lasers Based on Two-Dimensional TMDC Semiconductors

11:25 - 11:40 Dmitri Boiko

Self-confident light-current-voltage analytical model for QW saturable electroabsorber in a ridge waveguide laser structure

11:40 - 12:05 Gadi Eisenstein

Coherent interactions and quantum properties of short pulses propagating in a quantum dot gain medium

12:05 - 12:30 Nikolay Rosanov

Recent advances in low-cycle electromagnetic pulses

12:30 - 12:40 Group Photo

12:40 - 14:00 Lunch Break

14:00 - 14:25 Kestutis Staliunas

Light Trapping by Non-Hermitian Thin Films

14:25 - 14:50 Angela Thränhardt

Photonic and Phononic Structures Across Scales: From Art Installations to Semiconductor Lasers

14:50 - 15:05 Thorsten Ackemann

Laser patterns and supersolids of light

15:05 - 15:30 Coffee Break

15:30 - 15:55 Maria Ana Cataluna

Dynamic optical injection of mode-locked quantum-dot lasers for high-speed optical sampling

15:55 - 16:20 Peng Huanfa

Chip-Scale Kerr Frequency Combs for Ultra-Broadband Optical Arbitrary Waveform Generation

16:20 - 16:45 Quentin Bourdet

Long-wavelength microresonator-based frequency combs

16:45 - 17:00 Dmitri Boiko

200pJ pulse energy monolithic mode locking in GaInAs/GaInAsP vs GaInAsP/GaInP QW systems

from 18:00 Workshop Dinner

Restaurant Maximilians
Friedrichstraße 185-190, 10117 Berlin

9:00 - 9:25 Marcel Clerc

Turbulence-Like Phenomena in Liquid Crystal Light Valves

9:25 - 9:50 Mustapha Tlidi

Spatio-temporal dissipative solitons in optical cavities

9:50 - 10:15 Daria Dolinina

Synchronization between Kerr cavity solitons and broad laser pulse injection

10:15 - 10:30 Margarida Facao

Role of packaging induced stress on filamentation characteristics of broad area semiconductor lasers

10:30 - 11:00 Coffee Break

11:00 - 11:25 Guillaume Huyet

Property of frequency combs under noisy optical injection

11:25 - 11:50 Otti D'Huys

Excitability and stochastic effects in a spiking laser network

11:50 - 12:05 Berta Martínez-Pàmias

Dynamics of phase synchronization in a coupled laser system for quantum random number generation

from 12:05 Closing

List of Posters

Poster Session on Monday (June 16)

Poster 1 Hans Wenzel

Design of wavelength stabilized Bragg reflection waveguide laser for parametric fluorescence

Poster 2 Maria Ana Cataluna

Understanding mode-locked quantum-dot lasers using the dispersion-scan technique

Poster 3 Ko Dogyun

Estimation of the second-order coherence function using quantum reservoir and ensemble methods

Poster 4 Ruiling Weng

Time Crystal Coarsening in Active Mode-Locked Lasers

Poster 5 Lilli Kuen

Numerical study of time dependent dynamical simulations of PCSELs

Poster 6 Lutz Mertenskötter

Non-Markovian Noise in Semiconductor Lasers