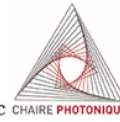




International Symposium on Physics and Applications of Laser Dynamics 2023

29 November
01 December 2023
Metz (France)



Wednesday 29 November 2023
Mercure Hotel Metz Centre

08H30 – Welcome coffee

09H00 – Welcome by the conference chairs

M. SCIAMANNA (Chair in Photonics, CentraleSupélec, France)

F. GRILLOT (Institut Polytechnique de Paris, Telecom Paris, France)

09H15 – Session 1 Optical feedback and microresonators

Chaired by : Marc SCIAMANNA (CentraleSupélec, France)

09H15 Thomas Erneux (invited)

Université Libre de Bruxelles (Belgium)

The limit of small delay in optical systems

09H45 Tobias HERR (invited)

CFEL/DESY (Germany)

Nano-structured microresonators and amplifiers for chip-integrated femtosecond photonics

10H15 Wenlu WANG^{1, 2}, Shihao DING², Zihao WANG³, Ting WANG³,
Jianjun ZHANG³, Shiyuan ZHAO², Heming HUANG², Xiaochuan XU¹,
Yong YAO¹, Frédéric GRILLOT², Jianan DUAN¹

¹State Key Laboratory on Tunable Laser Technology, Harbin Institute of Technology (China)

²Institut Polytechnique de Paris, Télécom Paris (France)

³Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences (China)

Bandwidth enhancement in 100 GHz quantum dot comb lasers via external optical feedback

10H35 - Coffee break

11H10 - Session 2 Spin lasers

Chaired by : Antonio HURTADO (Univ Strathclyde, UK)

11H10 Martin HOFMANN (invited)
Ruhr-Universität Bochum (Germany)

Spin lasers - prospects and challenges

11H40 Mariusz DRONG^{1, 2}, Jan PERINA, Jr.³, Tibor FÖRDÖS¹,
Henri-Yves JAFFRES⁴, Kamil POSTAVA¹, Henri-Jean DROUHIN²
¹Technical University of Ostrava (Czech Republic)
²Laboratoire des Solides Irradiés, Commissariat à l'énergie atomique et
aux énergies alternatives, Ecole Polytechnique, Centre National de la
Recherche Scientifique (France)
³Joint Laboratory of Optics of Palacky University and Institute of Physics
of Academy of Sciences of the Czech Republic (Czech Republic)
⁴Unité Mixte de Physique CNRS/Thales and Université Paris-Saclay,
Centre national de la recherche scientifique - CNRS (France), UMR CNRS
Thales (France)

Polarization control of spin-laser via Fermi arc

12H00 Pambiang Abel DAINONE¹, Mathieu STOFFEL¹, Xavier DEVAUX¹,
Xavier MARIE², Pierre RENUCCI², Henri JAFFRES³, Jean-Marie GEORGE³,
Hervé RINNERT¹, Yuan LU¹
¹Institut Jean Lamour, Université de Lorraine, Centre National de la
Recherche Scientifique, Centre National de la Recherche Scientifique :
UMR7198 (France)
²INSA (France)
³Laboratoire des Solides Irradiés, Commissariat à l'énergie atomique et
aux énergies alternatives, Ecole Polytechnique, Centre National de la
Recherche Scientifique (France)

*Spin injection and relaxation in p-doped InGaAs/GaAs quantum-dot spin
light emitting diodes at remanence*

12H20 - Lunch

14H00 - Session 3 Optical combs nonlinear dynamics

Chaired by : Julien JAVALOYES (Univ de les Iles Baleares, Spain)

14H00 Bryan KELLEHER (invited)
University College Cork (Ireland)

Dynamics of integrated, bidirectionally coupled, optical comb sources

14H30 Daniel PLAZA-VAS^{1,2,3}, Angel VALLE³, Nathalie VERMEULEN¹,
Ana QUIRCE^{1, 3}

¹Brussels Photonics Team, Vrije Universiteit Brussel (Belgium)

²Universidad de Cantabria (Spain)

³Instituto de Física de Cantabria (Spain)

In-depth analysis of VCSEL-based frequency combs induced by optical injection

14H50 Yu-Han HUNG^{1,2}, Hsu-Ting TANG¹

¹Department of Photonics, National Sun Yat-sen University (Taiwan)

²Miniaturized Photonic Gyroscope Research Center, National Sun Yatsen University (Taiwan)

Cascaded injection of semiconductor lasers in period-one nonlinear dynamic for optical frequency comb generation

15H10 Yaya DOUMBIA, Tushar MALICA, Delphine WOLFERSBERGER,
Marc SCIAMANNA

Chair in Photonics, LMOPS, CentraleSupélec (France)

Wideband chaos generation in a laser diode under optical frequency comb injection.

15H30 - coffee break

16H00 - Session 4 : Optical feedback dynamics

Chaired by : Sze-Chun Nelson CHAN (City University Hong-Kong)

16H00 Anton V. KOVALEV¹, Md Shariful ISLAM¹, Gleb DANILENKO¹,
David CITRIN¹, Alexandre LOCQUET¹, Evgeny VIKTOROV²

¹Georgia Tech - CNRS [Metz], Georgia Institute of Technology [Atlanta],
Centre National de la Recherche Scientifique : IRL2958 (France)

Formation of multiplets in a laser with feedback-induced gain-switching

16H20 Lucas OLIVERIO, Damien RONTANI, Marc SCIAMANNA
Chair in Photonics, LMOPS, CentraleSupélec (France)

Scenarios in Non-linear Dynamics: An Exploration of a Semiconductor Laser under the Influence of both Optical Feedback and Optical Injection

16H40 Robbe DE MEY¹, W. Jolly SPENCER^{1, 2}, Alexandre LOCQUET³,
Martin VIRTE¹

¹Brussels Photonics Team, Vrije Universiteit Brussel (Belgium)

²Optics, Photonics, Electromagnetism, Radio-Communications and Acoustics, Vrije Universiteit Brussel (Belgium)

³ Georgia Tech Europe, Georgia Institute of Technology (USA), Centre National de la Recherche Scientifique (France)

Experimentally measuring the Time Delay Signature of a Semiconductor Laser with Optical Feedback in Different Dynamical Variables

17H00 - Session 5 : Applications of laser nonlinear dynamics

Chaired by : Vassilios KOVANIS (Virginia Tech, U.S.A.)

17H00 Baptiste DE AZEVED^{1,2}, Sylvain LECLER^{1, 2}, David PALLARES³,
Armél BAHOUKA³, Frédéric ANTONI¹

¹iCUBE, Laboratoire des sciences de l'ingénieur, de l'informatique et de l'imagerie, Ecole Nationale du Génie de l'Eau et de l'Environnement de Strasbourg, Université de Strasbourg, Institut National des Sciences Appliquées - Strasbourg, Institut National de Recherche en Informatique et en Automatique, Les Hôpitaux Universitaires de Strasbourg (HUS), Centre National de la Recherche Scientifique, Matériaux et Nanosciences Grand-Est, Réseau nanophotonique et optique, Réseau nanophotonique et optique (France)

²Institut National des Sciences Appliquées (France)

³IREPA LASER (France)

Glass-welding using ultrafast laser at high repetition rate and with long focal

17H20 Cheng-Ting LEE, Chih-Hao CHANG, Han-Ling TSAY, Fan-Yi LIN
Institute of Photonics Technologies, Department of Electrical Engineering, National Tsing Hua University (Taiwan)

Generation of random-modulated pulses using a gain-switched semiconductor laser with a recirculating delay line interferometer for lidar applications

17H40 Chin-Hao TSENG¹, Sheng-Kwang HWANG^{1,2}

¹Department of Photonics, National Cheng Kung University (Taiwan)

²Advanced Optoelectronic Technology Center, National Cheng Kung University (Taiwan)

Photonic microwave generation using two mutually coupled semiconductor lasers operated at period-one dynamics

18H00 Brian SINQUIN, Marco ROMANELLI, Mehdi ALOUINI, Marc VALLET
Institut FOTON UMR 6082, University of Rennes, CNRS (France)

Generation of low jitter picosecond optical pulses in a direct-modulation optoelectronic oscillator

18H20 – Nature Photonics

by the editor-in-chief Oliver GRAYDON

18H50 – end of day 1

19H00 – departure for a tour of Metz Christmas market

Thursday 30 November 2023
Mercure Hotel Metz Centre

08H30 – Welcome coffee

09H00 - Session 6 : spatio-temporal light dynamics

Chaired by : Frédéric GRILLOT (Télécom Paris, France)

09H00 Jean-Pierre WOLF (keynote)
University of Geneva (Switzerland)

Laser Control of Atmospheric Fog and Lightning Strikes

09H45 Mathias MARCONI (invited)
Institut de Physique de Nice

Spatio-temporally reconfigurable light in degenerate laser cavities

10H15 Stefan BITTNER, Damien RONTANI, Marc SCIAMANNA
Chair in Photonics, LMOPS, CentraleSupélec (France)

Broad-area VCSEL with complex and chaotic dynamics

10H35 - Coffee break

11H00 - Session 7 : Frequency combs and mode-locking

Chaired by : Bryan KELLEHER (University College Cork, Ireland)

11H00 Mircea GUINA (invited)
Tampere University (Finland)

Quantum well semiconductor mirrors – new applications to laser technology

11H30 Julien JAVALOYES (invited)
University of the Balearic Island (Spain)

Kerr frequency combs in injected semiconductor micro-cavities

12H00 Svetlana GUREVICH¹, Julien JAVALOYES², Denis HESSEL¹
University of Muenster (Germany)

¹Institute for Theoretical Physics, University of Münster (Germany)

²University of the Balearic Island (Spain)

Super Mode-Locking in Passively Mode-Locked Vertical External-Cavity Surface-Emitting Lasers

12H20 Camilla CASTILLO PINTO¹, Marcel CLERC², Heidi OTTEVAERE¹,
Krassimir PANAJOTOV^{1,3}

¹Brussels Photonics Team, Vrije Universiteit Brussel (Belgium)

²Departamento de Física, University of Santiago (Chili)

³Bulgarian Academy of Sciences (Bulgaria)

Experimental evidence of Quasiperiodic Route to Chaos in VECSEL-SESAM systems

12H40 - Lunch

14H00 - session 8 – Laser nonlinear dynamics I

Chaired by : Cristina MASOLLER (Univ. Politecnica di Catalunya, Spain)

14H00 Vassilios KOVANIS (invited)
Virginia Tech, USA

Quantum noise, fractal basins & coexisting limit cycles

14H30 Yannis KOMINIS (invited)
National Technical University of Athens (Greece)

Complex Synchronization Dynamics in Frequency Comb-Driven Optically Injected Lasers

15H00 Daan LENSTRA, Lukas PUTS, Weiming YAO
Eindhoven Hendrik Casimir Institute, Eindhoven University of
Technology (The Netherlands)

Noise-induced excitable pulses in a two-section semiconductor laser: a first-passage time analysis

15H20 Kaiwen JI¹, Alejandro YACOMOTTI¹, Zhong QI², Ramy EL-GANAINY²,
Li GE³

¹Centre de Nanosciences et de Nanotechnologies, CNRS, University
Paris-Sud, Université Paris-Saclay (France)

² : Michigan Technological University (U.S.A.)

³ : College of Staten Island (U.S.A.)

Tracking exceptional points above the lasing threshold

15H50 Kristian SEEGERT^{1,2}, Mikkel HEUCK^{1,2}, Yi YU^{1,2}, Jesper MORK^{2,3}

¹Department of Electrical and Photonics Engineering, Technical University of Denmark (Denmark)

²NanoPhoton–Center for Nanophotonics (Denmark)

³Department of Electrical and Photonics Engineering, Technical University of Denmark (Denmark)

Regimes of self-pulsing in lasers with dispersive mirrors

16H10 - coffee break

16H40 - session 9 – Laser nonlinear dynamics II

Chaired by : Cheng WANG (Shanghai Tech University, China)

16H40 Cristina MASOLLER (invited)

Universitat Politecnica de Catalunya, Spain

Experimental study of speckle patterns generated by a semiconductor laser with optical feedback

17H10 Anton STROGANOV, Anton KOVALEV¹, Evgeny VIKTOROV

ITMO University (Russia)

Extreme events in short-cavity frequency-swept semiconductor lasers

17H30 - session 10 – Laser chaos-based applications

Chaired by : Daan LENSTRA (TU Eindhoven, The Netherlands)

17H30 Jules MERCADIER, Yaya DOUMBIA, Stefan BITTNER, Marc SCIAMANNA

Chair in Photonics, LMOPS, CentraleSupélec (France)

Chaos injection and synchronization in cascade experiments

17H50 Jingya RUAN, Sze-Chun Nelson CHAN

City University of Hong-Kong (Hong-Kong SAR China)

Balanced Delayed Homodyning for Chaotic Random Bit Generation Using an Optically Injected Semiconductor Laser

18H10 Yibo PENG¹, Kaili LIN¹, Penglei WANG¹, Qian GONG², Baile CHEN^{1,3},
Frédéric GRILLOT⁴, Cheng WANG^{1,3}

¹School of Information Science and Technology, ShanghaiTech
University (China)

²Key Laboratory of Terahertz Solid State Technology, Shanghai Institute
of Microsystem and Information Technology, Chinese Academy of
Sciences (China)

³Shanghai Engineering Research Center of Energy Efficient and Custom
AI IC, ShanghaiTech University (China)

⁴LTCI, Télécom Paris, Institut Polytechnique de Paris (France)

Mid-infrared chaos and chaotic lidar based on interband cascade lasers

18H30 Fumiyoshi KUWASHIMA¹, Mona JARRAHI², Semih CAKMAKYAPAN²,
Kenji WADA³, Masanobu HARAGUCHI⁴, Yuki KAWAKAMI⁵,
Takeshi MORIVASU⁶, Osamu MORIKAWA⁷, Kazuyoshi KURIHARA⁸,
Hideaki KITAHARA⁹, Takashi FURUYA⁹, Makoto NAKAJIMA¹⁰,
Masahiko TANI⁹

¹Fukui Univ. of Tech. (Japan)

²Electrical and Computer Engineering Department, University of
California Los Angeles (U.S.A.)

³Department of Physics and Electronics, Osaka Metropolitan University
(Japan)

⁴Tokushima University (Japan)

⁵Department of Electronics and Information Engineering, National
Institute of Technology (KOSEN), Fukui College (Japan)

⁶Faculty of Engineering, University of Fukui (Japan)

⁷Chair of Liberal Arts, Japan Coast Guard Academy (Japan)

⁸School of Education., University. of Fukui (Japan)

⁹Research Center for Development of Far-Infrared Region, University of
Fukui (Japan)

¹⁰Institute of Laser engineering, Osaka Univ. Fukui Univ. of Tech. (Japan)

Stable and Wide range THz Wave using chaos supremacy

18H50 - End of day 2 and group picture

20H00 – Conference dinner (Restaurant El Theatris, Metz)

Friday 01 December 2023
Mercure Hotel Metz Centre

08H30 – Welcome coffee

09H00 - Session 11 – Innovative laser structures

Chaired by : Fan-Yi LIN (National Tsing Hua University, Taiwan)

09H00 Patrice GENEVET (keynote)
School of Mines (U.S.A)

Vertical integration of Metasurfaces for laser wavefront engineering

09H45 Cristina RIMOLDI (invited)
Politecnico di Torino (Italy)

Addressing CW stability and frequency comb regimes in III-V SiN hybrid lasers with narrowband reflector

10H15 D. Cui¹, J. Chen¹, H. Huang¹, S. Ding¹, A. Boussekou², F. GRILLOT^{1,3}

¹LTCI, Telecom Paris, Institut Polytechnique de Paris (France)

²Center for Nanosciences and Nanotechnologies (France)

³Center for High Technology Materials, University of New Mexico

Static and nonlinear properties of a hybrid plasmonic distributed feedback laser

10H35 - Coffee break

11H00 - Session 12 : Laser-based neuro-inspired computing

Chaired by : Damien RONTANI (CentraleSupélec, France)

11H00 Cheng WANG (invited)
ShanghaiTech University (China)

Scalable parallel and deep photonic reservoir computing

11H30 Miguel SORIANO (invited)
University of the Balearic Island, IFISC (Spain)

Ultrafast Information Processing with Delay-Coupled Semiconductor Lasers

12H00 Antonio HURTADO (invited)
University of Strathclyde (UK)

Photonic Spiking Neurons and Spiking Neural Networks

12H30- Student Prize by Nature Photonics

O. GRAYDON (Nature Photonics, Editor-in-Chief)

12H40- End of IS-PALD 2023 Final words by the conference chairs

M. SCIAMANNA (Chair in Photonics, CentraleSupélec)

F. GRILLOT (Institut Polytechnique de Paris, Telecom Paris)