

European Semiconductor Laser Workshop 2019

Tyndall National Institute, University College Cork

Friday September 27th

8:30-9:00 Registration

9.00-9:30 Welcome

Session 1: Mode-Locked Lasers and Frequency Combs

9:30-9:45

Effects of power-split ratio and phase delay on performance of self-mode-locked QDash lasers subject to asymmetric dual-loop optical feedback

H. Ashgar, E. Sooudi and *J.G. McInerney*

Department of Physics and Tyndall National Institute, University College Cork

9:45-10:00

InP Quantum Dot Monolithic Mode-Locked Lasers for Ultrashort Pulse Generation at 735 nm

C.P. Alford, Z. Li, S. Shutts, A. F. Forrest, R. Alharbi, A.B. Krysa, M.A. Cataluna and P.M. Smowton

EPSRC Future Compound Semiconductor Manufacturing Hub, School of Physics & Astronomy, Cardiff University

10:00-10:15

Optical frequency comb quantum dash lasers subject to time-delayed optical self-injection

P. Fiala, *D. Auth*, C. Weber, Q. Gaimard, A. Ramdane and S. Breuer

Institute of Applied Physics, Technische Universität Darmstadt

10:15-10:30

Optical frequency comb generation via pulse excitation using step-recovery diodes in an optically-injected semiconductor laser

A. Rosado, E. P. Martin, A. Pérez-Serrano, J. M. G. Tijero, I. Esquivias and P. M. Anandarajah

Universidad Politécnica de Madrid, Spain

10:30-11:00 Coffee Break

Session 2: VCSELS and Quantum Dot Lasers

11:00-11:15

Optical Gain and Absorption of 1.55 μm Emitting InAs Quantum Dot Lasers Directly Grown on (001) Silicon

C.P. Allford, Z. Li, S. Shutts, B. Shi, W. Luo, K.M. Lau and P.M. Snowton

EPSRC Future Compound Semiconductor Manufacturing Hub, School of Physics & Astronomy, Cardiff University

11:15-11:30

Tailoring the Linewidth of Quantum Dot Lasers via the Temperature

F. Köster, J. Duan, H. Huang, B. Dong, Z. Lu, P. J. Poole, F. Grillot and K. Lüdge

Institute for Theoretical Physics, Technische Universität Berlin

11:30-11:45

30 GHz and 45 Gbps with $\phi \sim 7.5 \mu\text{m}$ VCSELS

N. Haghghi, P. Moser, M. Zorn and J. A. Lott

Institute of Solid-State Physics and Center of Nanophotonics, Technische Universität Berlin

11:45-12:00

Polarization dynamics of a VCSEL with thermally tuned birefringence

N. Jung, M. Lindemann, P. Stadler, T. Pusch, R. Michalzik, M. R. Hofmann and N. C. Gerhardt

Photonics and Terahertz Technology, Ruhr-University Bochum, 44780 Bochum, Germany

12:00-13:15 Lunch

Session 3: Neuro-inspired Photonics

13:15-13:45

Optical coupling of quantum-dot micropillar lasers with perspective towards neuromorphic computing – Invited Talk

Xavier Porte

FEMTO-ST Institute, Besançon

13:45-14:00

Type II excitability in optical injected quantum dot lasers

M. Dillane, J. Robertson, D. Goulding, A. Hurtado, B. Kelleher

Department of Physics & Tyndall National Institute, University College Cork

14:00-14:15

On-chip photonic delay-based reservoir computing

K. Harkhoe, G. Verschaffelt, A. Katumba, P. Bienstman, J. Pauwels, S. Massar, G. Van der Sande

Applied Physics Research Group, Vrije Universiteit Brussel, Belgium

14:15-14:30

Neuromorphic photonic circuits with VCSEL-based artificial spiking neurons

J. Robertson, M. Hejda, J. Bueno, E. Wade and A. Hurtado

Institute of Photonics, Dept. of Physics, University of Strathclyde, Glasgow, Scotland

14:30-15:00

Nanoscale light sources for neuromorphic nanophotonic circuits – Invited Talk

Bruno Romeira

International Iberian Nanotechnology Laboratory, Braga, Portugal

15:00-15:30 Coffee Break

Session 4: Semiconductor Laser Dynamics

15:30-16:00

**Spatiotemporal extreme events in spatially extended semiconductor lasers –
Invited Talk**

Giovanna Tissoni

Université Côte d'Azur, Institut de Physique de Nice, France

16:00-16:15

Nonlinear laser dynamics induced by injection of a frequency comb

Y. Doumbia, T. Malica, D. Wolferberger, K. Panajotov and M. Sciamanna

*Chaire Photonique, LMOPS, CentraleSupélec, Université Paris-Saclay, Metz, France
Université de Lorraine, CentraleSupélec, LMOPS, Metz, France*

16:15-16:30

**Spectral Switches in Microwave Oscillation of Semiconductor Laser with
Optoelectronic feedback**

M.S. Islam, G. Coget, A.V. Kovalev, A. Locquet, *E.A. Viktorov* and D. S. Citrin

ITMO University, Birzhnevaya Liniya 14, 199034 St. Petersburg, Russia

16:30-16:45

**High-frequency chaotic dynamics of laser diodes with long phase-conjugate
feedback**

G. Bouchez, D. Wolferberger, M. Sciamanna

*Chaire Photonique, LMOPS, CentraleSupélec, Université Paris-Saclay, Metz, France
Université de Lorraine, CentraleSupélec, LMOPS, Metz, France*

16:45-17:00

Frequency Locking Mechanisms enabled by Optical Frequency Comb Injection

K. Shortiss, B. Lingnau, F. Dubois, B. Kelleher and F. H. Peters

Department of Physics & Tyndall National Institute, University College Cork

17:00-17:30

Special Invited Lecture

**The ESLW from 1983 to 2019: personal experiences and perspectives -
Semiconductor emitters going from Telecom to Quantum**

Wolfgang Elsässer

Technische Universität Darmstadt

18:15 Walking Tour of University College Cork

19:30 Workshop Dinner: Glucksman Gallery

European Semiconductor Laser Workshop 2019

Tyndall National Institute, University College Cork

Saturday September 28th

9:00-9:45

Keynote Lecture: Semiconductor Fano Lasers

Jesper Mørk

Technical University of Denmark

Session 5: Modelling and Numerical Simulations

9:45-10:15

Third Order Dispersion in Optical Time Delayed Systems – Invited Talk

Svetlana Gurevich

Institute of Theoretical Physics, Westfälische Wilhelms-Universität Münster

10:15-10:30

Self-consistent thermal-opto-electronic model for the dynamics in high-power semiconductor lasers

*U. Bandelow, M. Radziunas, J. Fuhrmann, A. Zeghuzi, H.-J. Wünsche and H. Wenzel
Weierstrass Institute (WIAS), Mohrenstrasse 39, 10117 Berlin, Germany*

10:30-10:45

Modelling the Effect of Dislocations in III-V Lasers on Si

*C. Hantschmann, Z. Liu, M.C. Tang, A.J. Seeds, H.Y. Liu, I.H. White and R.V. Penty
Centre for Photonic Systems, Department of Engineering, University of Cambridge*

10:45-11:00

Multimode Dynamics of Long-Cavity Fabry-Pérot Quantum-Dot Lasers

B. Lingnau, James O'Callaghan, B. Corbett and B. Kelleher

Department of Physics & Tyndall National Institute, University College Cork

11:00-11:15

Tunable Kerr frequency combs and cavity solitons in a nonlinear time-delayed Gires-Tournois interferometer

C. Schelte, A. Pimenov, A. G. Vladimirov, J. Javaloyes and S.V. Gurevich

Departament de Física, Universitat de les Illes Balears & Institute of Applied Computing and Community Code (IAC-3), Palma de Mallorca, Spain.

Institute for Theoretical Physics and Center for Nonlinear Science, University of Münster

11:15-11:45 Coffee Break

Session 6: Nano- and Micro-structures

11:45-12:15

InP based Integrated tunable laser systems for OCT and strain sensing – Invited Talk

Erwin Bente

Eindhoven University of Technology

12:15-12:30

Mode-Hop Suppression by Cavity-Length Engineering in Hybrid External Cavity Photonic Crystal Lasers

R. Sheehan, P. Singaravelu, S. Butler, G. Devarapu, S. Hegarty and L. O’Faoláin

Centre for Advanced Photonics and Process Analysis, Cork Institute of Technology, Cork, Ireland

12:30-12:45

Metamorphic heterostructures: new material concepts for telecom lasers and visible light-emitting diodes

S. Bogusevski, C.A. Broderick and E.P. O’Reilly

Department of Physics & Tyndall National Institute, University College Cork

12:45-13:00

Temperature Distribution Analysis of Multi-Section Slotted Semiconductor Lasers

R. McKenna, S.T. Naimi, S. Corbett, D. McCloskey and J.F. Donegan

School of Physics, Trinity College Dublin, Ireland

13:00-13:15

High Power Surface Emitting Superluminescent LEDs

R. Cahill, J. Morales, B. Corbett

Tyndall National Institute, University College Cork

13:15-13:30

Photonic integrated circuit extended cavity passively mode-locked symmetric ring laser with dual absorber

D. Auth, M.-C. Lo, C. Weber, P. Fiala, P. Sauer, G. Carpintero and S. Breuer

Institute of Applied Physics, Technische Universität Darmstadt

13:30-15:00 Lunch and Poster Session

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