



TECHNICAL DIGEST

7th IS-PALD International Symposium 2017
Physics and Applications of Laser Dynamics



CentraleSupélec

Wednesday / Friday, November 15-17, 2017
Marriott Rive Gauche, Paris, France

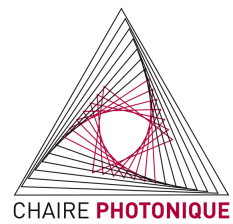
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Preface

Dear participants,

It is our pleasure to welcome you at the International Symposium on Physics and Applications of Laser Dynamics (IS-PALD) 2017!

IS-PALD is organized each year since 2011 with an organizing committee that involves in particular researchers from France and Taiwan. The 2017 edition is the third one being organized in France after the successful 2013, and 2015 editions. IS-PALD 2017 is organized by Télécom ParisTech and CentraleSupélec, which are two major top leading engineering Schools in France with specializations including electrical and computer engineering. At IS-PALD, we want to promote the scientific excellence hence keynote and invited speakers are all well-known scientists highly recognized in the field. The 2017 edition promises to be very successful with a total of 54 contributions including 26 orals, 16 posters, 8 invited talks, and 4 keynote speakers. Although the topics are varied, they all target the understanding of the physics of laser dynamics and its application to optical signal processing, sensing and communications. In particular, the 2017 edition is very delighted to welcome more contributions on quantum cascade laser dynamics and also to cover some new exciting physics on nanolaser dynamics and mesoscopic nonlinear oscillators. At IS-PALD, authors and participants come from all the world covering more than 15 different nationalities.

In this preface, we want to thank all the plenary and invited speakers as well as participants for their attendance and contributions. We strongly acknowledge the support of the following companies: Yenista Optics, Keopsys, Apex Technologies, and Anritsu that will exhibit their new products in laser and optical metrology. We thank our directors at Télécom ParisTech and CentraleSupélec for their support in organizing the conference. We thank all our sponsors including the Office of Naval Research Global (ONRG) and the European Office of Aerospace Research and Development (EOARD) for their financial support, the members of the conference organizing committee and the members of our international advisory committee for their great involvement in making this conference successful.

A selection of the most challenging and fascinating results will be offered to possibility to submit an extended version of their contributions to Optics Express, in the frame of a featured issue where Profs. M. Sciamanna and S. Z. Chan conference co-chairs will act as guest editors in collaboration with Prof. F. Grillot. This journal featured issue will therefore nicely complement this conference proceedings with the most original and innovative results coming out of the conference program. We hope you will enjoy the conference and its scientific program as much as we have been happy to organize it! We wish you all a fruitful and interesting conference and hope you will have the opportunity to create new collaborations, and therefore to promote even more the interest in studying laser dynamics and applications.

Yours sincerely,

Conference co-chairs
Frédéric Grillot, Télécom ParisTech
Marc Sciamanna, CentraleSupélec

November 15, 2017 (Wednesday)		
09:00 - 09:30		Symposium Registration
09:30 - 9:45		Symposium Opening Remarks (F. Grillot & M. Sciamanna)
9:45 - 10:00		Welcome from Télécom ParisTech (B. Thedrez)
10:00 - 10:30	Fundamentals and Applications of Laser Nonlinear Dynamics II	F.-Y. Lin (Keynote Talk) 3D chaos lidar system
10:30 - 10:50		K.T. Ting Generation of aperiodic return-to-zero pulse sequences from a gain-switched Fabry-Perot laser subjected to dual-mode optical injection for random pulse lidar applications
10:50 - 11:10		A. Thorette Self-stabilization of the beat-note of monolithic DFB lasers for microwave signal generation.
11:10 - 11:40		Coffee break
11:40 - 12:00	Mode-locking I	T. Ackemann Mode-locked spatial laser solitons
12:00 - 12:20		T. Malica Classification of dynamical regions of operation of a long cavity passively mode-locked VECSEL
12:20 - 12:40		A. Perego Dissipation induced instabilities in nonlinear optics: from amplifiers to mode-locked lasers
12:40 - 14:00		Buffet Lunch

14:00 - 14:30	Quantum Cascade Laser Dynamics I	Carlo Sirtori (Keynote Talk) Mid-IR optoelectronic devices for free space optical communications
14:30 - 14:50		R. Santagata QCL stabilisation for high resolution molecular spectroscopy
14:50 - 15:10		M. Singleton Phase measurement of a Mid-IR QCL comb
15:10 - 15:30		A. Forrer Octave-spaced dual frequency comb in a single monolithic quantum cascade laser source
15:30 - 16:00	Coffee break	
16:00 - 16:30	Quantum Cascade Laser Dynamics II	T.C. Newell (Invited Talk) Exploring temporal behavior in broad-area quantum cascade lasers
16:30 - 16:50		A. Herdt Injection dynamics of mutually delay-coupled non-identical quantum cascade lasers
16:50 - 17:10		T. Erneux The stability of quantum cascade lasers subject to optical feedback in the large delay limit
17:10 - 17:40	Fundamentals and Applications of Laser Nonlinear Dynamics II	S.-K. Hwang (Invited Talk) Period-one nonlinear dynamics of optically injected semiconductor lasers for radio-over-fiber applications
17:40 - 18:10		V. Kovanis (Invited Talk) Turbulent chimera states in large diode lasers arrays
19:00 - 20:30	Welcome Drink & Poster Session	

November 16, 2017 (Thursday)		
09:00 - 09:30	Mode-locking II	M. Giudici (Invited Talk) Generation and tweezing of localized structures in passively mode-locked lasers
09:30 - 09:50		D. Churkin Spatio-temporal extreme events in passively mode-locked fibre laser generating noise-like pulses
09:50 - 10:10		A. Perez-Serrano A voltage driven traveling-wave model for multi-section integrated photonic devices
10:10 - 10:40	Coffee Break	
10:40 - 11:10	Novel Physics I	C.-W. Wong (Keynote Talk) Ultrafast and nonlinear dynamics in mesoscopic nonlinear oscillators
11:10 - 11:40		M. Sorel (Invited Talk) Semiconductor micro-ring lasers and resonators for fast switching and non-linear optics
11:40 - 12:00		E. Lucas Breathing soliton dynamics in passive Kerr microresonators
12:00 - 12:20		D. Lenstra Rate equation theory of feedback insensitive unidirectional semiconductor ring laser
12:20 - 14:00	Buffet Lunch	

14:00 - 14:30	Quantum Dot Lasers	J. P. Reithmaier (Invited Talk) Quantum dot laser dynamics and applications in high-speed direct modulation and narrow linewidth emission
14:30 - 14:50		B. Lingnau Enhancement of nonlinear frequency conversion by Rabi oscillations in quantum-dot semiconductor amplifiers
14:50 - 15:10		R. Pawlus RIN improvement by optical feedback of a two-state emitting QD laser
15:10 - 15:30		C. Wang Effect of epitaxial defects on the optical noise of InAs/GaAs quantum dot lasers monolithically grown on Germanium
15:30 - 15:50		H. Huang Short-delay feedback dynamics in InAs/GaAs quantum dot lasers emitting exclusively on ground or excited states
15:50 - 16:20	Coffee Break	
16:20 - 16:50	Fundamentals and Applications of Laser Nonlinear Dynamics II	S.-Z. Chan (Invited Talk) Noisy frequency-modulated period-one dynamics of optically injected laser diodes
16:50 - 17:10		M. Wishon Revisiting the “quasi-periodic” route to chaos
17:10 - 17:30		C.H. Uy Beyond the relaxation frequency limit in polarization switching
17:30 - 17:50		N. Li Bifurcation analysis of quantum dot spin-VCSELs
20:00 - 23:00	Gala Dinner	

November 17, 2017 (Friday)

09:00 - 09:30	Novel Physics II	J. Mørk (Keynote Talk) Photonic crystal Fano lasers
09:30 - 09:50		M. Marconi Asymmetric mode scattering in strongly coupled photonic crystal nanolasers
09:50 - 10:10		A. Shore High-frequency oscillations in mutually-coupled nano-lasers
10:30 - 10:40	Coffee Break	
10:40 - 11:10	Surface Emitting Lasers	T. Ackemann (Invited Talk) Vector vortex beams in vertical-cavity surface-emitting lasers with feedback
11:10 - 11:30		L. Pesquera Polarization dynamics of optical frequency combs generated by long-wavelength VCSELs in the gain-switching regime
11:30 - 11:50		A. Joly Increasing spin injection efficiency in a CW VECSEL with resonant pumping
11:50 - 12:10		E. Avrutin Modelling dynamics of gigahertz-rate mode-locked VECSELs in linear and folded cavities
12:10 - 12:20	Concluding Remarks	