

# NUSOD 2014 Conference Program

*all events take place in the Caixa Forum, 3 Weyler Place, Palma de Mallorca, Spain*

Monday	10:00-11:30	MA	Nanostructures ( <i>Bertazzi</i> )
	13:00-14:30	MB	GaN-based Devices ( <i>Karpov</i> )
	15:00-16:50	MC	Light-Emitting Diodes ( <i>Auf der Maur</i> )
	17:00-19:00	MP	Poster Session & Welcome Reception ( <i>Javaloyes</i> )
Tuesday	08:30-10:20	TuA	Circuits and Systems ( <i>Connelly</i> )
	10:50-12:40	TuB	Novel Devices ( <i>Swillam</i> )
	14:10-15:50	TuC	Optical Amplifiers ( <i>Radziunas</i> )
	16:20-18:10	TuD	Photonics ( <i>Sujecki</i> )
	20:00-22:00	TuR	Rump Session: Efficiency Droop ( <i>Piprek</i> )
Wednesday	08:30-09:20	WA	Novel Materials ( <i>Tomic</i> )
	09:50-11:20	WB	Laser Diodes ( <i>Chow</i> )
	11:30-12:20	WC	Numerical Methods ( <i>Wu</i> )
	14:00-22:00	WED	Conference Excursion & Dinner ( <i>start: Caixa Forum</i> )
Thursday	08:30-09:50	ThA	Solar Cells I ( <i>Hu</i> )
	10:20-11:40	ThB	Solar Cells II ( <i>Handel</i> )
	13:10-15:00	ThC	Photodetectors ( <i>Sujecki</i> )
	15:30-17:00	ThPD	Postdeadline Session ( <i>Piprek</i> )
Friday	09:00-13:00	FS1	<i>Crosslight Software Workshop</i>

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## **Monday, 1 September 2014**

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**Registration Desk opens 8:00**

**10:00-10:10 Welcome Address**

**10:10-11:30 Nanostructures**

Session Chair: *Francesco Bertazzi*, Polytechnic University of Turin, Italy

**MA1** Many-Body Effects in CdSe/CdTe Coloidal Quantum Dots ; Jacek M. Miloszewski and *Stanko Tomic* ; University of Salford, UK

**MA2** Realistic models of quantum-dot heterostructures ; Daniele Baretin (1), *Matthias Aur der Maur* (1), Alessandro Pecchia (2), and Aldo di Carlo (1) ; (1) University of Rome Tor Vergata, Italy; (2) CNR-ISMN, Monterotondo, Italy

**MA3** Model for a semiconductor quantum-dot nanolaser ; Weng W. Chow (1), F. Jahnke (2), and C. Gies (2) ; (1) Sandia National Laboratories, USA; (2) University of Bremen, Germany

**MA4** Design and simulation of high-speed nanophotonic electro-optic modulators ; *Simeon N. Kaunga-Nyirenda* (1), H.K. Dias (1), J.J. Lim (1), S. Bull (1), S. Malaguti (2), G. Bellanca (2) and *E.C. Larkins* (1) ; (1) The University of Nottingham, UK; (2) University of Ferrara, Italy

**11:30-13:00 Lunch Break** (individual)

### **13:00-14:30 GaN-based Devices**

Session Chair: *Sergey Karpov*, STR Group - Soft-Impact, Ltd., Russia

**MB1** Auger transitions and their signatures in III-nitride LEDs: a full-band modeling ; *Francesco Bertazzi*, Xiangyu Zhou, Michele Goano, Giovanni Ghione, Enrico Bellotti ; Politecnico di Torino, Italy (invited)

**MB2** Effect of alloy fluctuations in InGaN/GaN quantum wells on optical emission strength ; *Matthias Auf der Maur* (1), D. Baretin (1), A. Pecchia (2), F. Sacconi (3), A. Di Carlo (1) ; (1) Università degli Studi di Roma Tor Vergata, Italy; (2) CNR-ISMN, Italy; (3) Tiberlab Srl., Italy

**MB4** Trap-assisted tunneling in InGaN/GaN LEDs: experiments and physics-based simulation ; *Marco Mandurrino* (1), G. Verzellesi (2), M. Goano (1,3), M. E. Vallone (1), F. Bertazzi (1,3), G. Ghione (1), M. Meneghini (4), G. Meneghesso (4), and E. Zanoni (4) ; (1) Politecnico di Torino, Italy; (2) Università di Modena e Reggio Emilia, Italy; (3) IEIT-CNR, Politecnico di Torino, Italy; (4) Università di Padova, Italy

**MB5** Minimizing the influence of surface potentials in axial (In,Ga)N/GaN nanowire heterostructures by reducing their diameter ; *Oliver Marquardt*, L. Geelhaar, and O. Brandt ; Paul-Drude-Institut, Germany

**14:30-15:00 Coffee Break**

### **15:00-16:50 Light-Emitting Diodes**

Session Chair: *Matthias Auf der Maur*, University of Rome " Tor Vergata", Italy

**MC1** ABC-Model for Interpretation of Internal Quantum Efficiency and Its Droop in III-Nitride LEDs ; *Sergey Karpov* ; STR Group - Soft-Impact, Ltd., St.Petersburg, Russia (invited)

**MC2** Highly Efficient GaN-based Bipolar Cascade LEDs ; *Joachim Piprek* ; NUSOD Institute, USA

**MC3** Monte Carlo simulation of hot electron transport in III-N LEDs ; *Pyry Kivisaari*, Toufik Sadi, Jani Oksanen, and Jukka Tulkki ; Aalto University, Finland

**MC4** Numerical Analysis of Planar Light-Emitting Diode with Designed p-Electrode ; *Irina Khmyrova*(1), N.Watanabe(1), A. Kovalchuk(2), J. Kholopova(2), and S. Shapoval (2) ; (1) University of Aizu, Japan; (2) IMT RAS, Russia

**MC5** Double-sided Pattern Design on Patterned Sapphire Substrate of GaN-based LEDs ; Xinyu Yu, Zhen Che, *Jun Zhang*, Mengyuan Xie, Jianhui Yu, Huihui Lu, Yunhan Luo, Zhe Chen ; Jinan University, China

## **17:00-19:00 Poster Session & Welcome Reception**

Session Chair: *Julien Javaloyes*, Balearic Islands University, Spain

**MP01** A spurious-solution-free envelope function model for quantum-confined wurtzite nanostructures ; Xiangyu Zhou, *Francesco Bertazzi*, Michele Goano, Giovanni Ghione ; Politecnico di Torino, Italy

**MP02** Electrical characteristics simulation of GaAs-based blocked-impurity-band detector for THz application ; *Xiaodong Wang* (1), Bingbing Wang (1), Liwei Hou (1), Wei Xie (1), Xiaoyao Chen (2), and Ming Pan (1) ; (1) No. 50 Research Institute of China Electronics Technology Group Corporation, China; (2) Fudan University, China

**MP03** Photoresponse simulation for separate absorption and multiplication GaN/AlGaIn avalanche photodiode ; *Xiaodong Wang* (1), Bingbing Wang (1), Liwei Hou (1), Wei Xie (1), Xiaoyao Chen (2), and Ming Pan (1) ; (1) No. 50 Research Institute of China Electronics Technology Group Corporation, China; (2) Fudan University, China

**MP04** Calculation of silicon antireflective microstructures for mid-infrared applications ; *Young Min Song* (1), K. S. Chang (2) ; (1) Pusan National University, Korea; (2) Korea Basic Science Institute, Korea

**MP05** Determination of minority carrier lifetime in mercury-cadmium telluride photovoltaic detectors using parallel resistance method ; *Haoyang Cui*, J. L. Wang, C. Q. Wang, C. Liu, and Z. Tang ; Shanghai University of Electric Power, China

**MP06** The Photoelectric Conversion Behavior of GaAs/InGaAs/InAs QuantumDots-in-well in Double Barrier ; Wei-Wei Wang, Lin Ding, *Fang-Min Guo* ; East China Normal University, China

**MP07** Effect of Electron Blocking Layer on Inter-QW Transport in III-Nitride Multi-QW LEDs ; *Mikhail V. Kisin*, Chih-Li Chuang and Hussein S. El-Ghoroury ; Ostendo Technologies Inc., USA

**MP08** Reflective Semiconductor Optical Amplifier Modulator Dynamic Model ; *Michael Connelly* ; University of Limerick, Ireland

**MP10** A novel plasmonic nanosensor based on electro-magnetically induced transparency of waveguide ; B.Ni, X.Y. Chen, *Dayuan Xiong*, H. Liu, G.H. Hua, J.H. Chang, J.H. Zhang, H.Zhou ; (1) Nanjing University , China; (2) Fudan University, China; (3) East China Normal University, China

**MP11** Gap Surface Plasmon Waveguide Analysis ; *Michael G. Nielsen* and Sergey I. Bozhevolnyi ; University of Southern Denmark, Denmark

**MP12** Ultra-compact modulator based on Epsilon-Near-Zero metamaterial ; *Longzhi Yang*, Ting Hu, Ao Shen, Chongyang Pei, Bing Yang, Tingge Dai, Hui Yu, Yubo Li, Xiaoqing Jiang, and Jianyi Yang ; Zhejiang University, China;

**MP13** Twisted Split-ring Chiral Metamaterials for Broadband Circular Dichroism ; *Ruonan Ji*, Shaowei Wang, Xiaoshuang Chen and Wei Lu ; Shanghai Institute of Technical Physics, China

**MP14** A Self-consistent Algorithm for InGaAs/GaAs strained multi-period Quantum Well Infrared Photodetectors ; X.Q. Lu, *Dayuan Xiong*, C.L. Yu, J.Q. Wang ; East China Normal University, China

**MP15** Simulation of Kerr-nonlinear waveguide structures by an eigenmode expansion method ; *Jiri Petracek* ; Brno University of Technology, Czech Republic

**MP16** Plasmon-enhanced Light Absorption of Silicon Solar Cells Using Al Nanoparticles ; *Debao Zhang, X. Yang, X. Hong, Y. Liu, J. Feng* ; Changshu Institute of Technology, China

**MP17** Nanohole Design for High Performance Polymer Solar Cell ; *Doha M.A.Rahman (1), Mohamed Farahat O. Hameed (1,2)* , S. S. A. Obayya(1) ; (1) Zewail City of Science and Technology, Egypt; (2) Mansoura University, Egypt

**MP18** Influence of Gain on Transmission of Nanocavity Containing Metamaterials ; *Alireza Keshavarz, E.Tahmasebi* ; Shiraz University of Technology, Iran

**MP19** Efficient Modelling of Quantum Nanostructures ; *M. Ayad and Mohamed A Swillam* ; The American University in Cairo, Egypt

**MP20** Absorption Enhancement in Hexagonal Plasmonic Solar Cell ; *Muhammad.H.Muhammad (1) , Mohamed Farhat O. Hameed (1, 2)* , and S. S. A. Obayya (1) ; (1) Zewail City of Science and Technology, Egypt; (2) Mansoura University, Egypt

**MP21** Shape-induced Effect on c-Si Thin Film Solar Cell Efficiency ; *Chuanhong Liu* ; Peking University Shenzhen Graduate School, China

**MP22** Study of the optical properties of a micro pillar array solar cell for different configurations ; *Francisco Jose Cabrera-España, B. M. A. Rahman and A. Agrawal* ; City University London, United Kingdom

**MP23** Simulation of SOA-MRR-Based Equalization Technique for FSO Signals ; *Zoi V. Rizou (1), K. E. Zoiros (1), and A. Hatziefremidis (2)* ; (1) Democritus University of Thrace, Greece; (2) Technological Educational Institute of Chalkis, Greece

**MP24** Design of Integrated Refractive Index Sensor Based on Bend Waveguide with a Trench Structure ; *Jin Hwa Ryu, H. S. Yang, C. M. Kang, L. M. Do, K. B. Lee, N. K. Um, and K. H. Baek* ; Electronics and Telecommunications Research Institute, Korea

**MP25** Simulation of a Ridge-type Semiconductor Laser with Selective Double-Sided Anti-guiding and Partially Undoped Cladding Layers ; *Daiya Katsuragawa and Takahiro Numai* ; Ritsumeikan University, Japan

**MP26** Mode deflection in lithium niobate waveguide via electro-optic effect and its application for beam smoothing ; *Yuan Wang, Huihui Lu, Jianhui Yu, Yingxin Zeng, Xiaoli He, Yunhan Luo, Jun Zhang, Jieyuan Tang, Zhe Chen* ; Jinan University, China

**MP27** Analysis of Gain Saturation Characteristics in SOAs for Different Input Pulse Shapes ; *Suchi Barua (1), Narottam Das (1, 2), Sven Nordholm (1), and Mohammad Razaghi (3)* ; (1) Curtin University, Australia; (2) Curtin University Sarawak, Malaysia; (3) University of Kurdistan, Iran

**MP28** Optical Gain in Double Semi-Parabolic Quantum Well Laser typical of AlGaAs/GaAs ; *Alireza Keshavarz (1), N. Zamani(1), and H. Nadgaran (2)* ; (1) Shiraz University of Technology, Iran (2) Shiraz University, Iran

**MP30** Enhanced Light Absorption in Plasmonics-based MSM-PD with Special Design of Subwavelength Slit ; *F. F. Masouleh(1), Narottam Das(2), and S. M. Rozati(1)* ; (1) University of Guilan, Iran; (2) Curtin University, Australia

**MP31** Hybrid FDTD modeling of a two-level atomic system ; *Bartłomiej Salski* ; Warsaw University of Technology, Poland

**MP32** Numerical Analysis of Optical Coupling Characteristics of Side-polished Photonics Crystal Fiber and Micro Optical Fiber with Bending ; Xiaoli He, Jianhui Yu, *Yingxin Zeng*, Yunhan Luo, Jun Zhang, Jieyuan Tang, Zhe Chen, Huihui Lu ; Jinan University, China

**MP33** Multiple-level Grating Used for Nanostructured Thin Film Solar Cells ; *Chuanhong Liu* ; Peking University Shenzhen Graduate School, China

**MP34** Hybrid Core Semiconductor Nanowires for Solar Cell Applications ; Mohamed Hussein (1, 2) , Nihal F. F. Areed (1, 3), *Mohamed Farhat O. Hameed* (1, 3), S. S. A. Obayya (1) ; (1) Zewail City of Science and Technology, Egypt; (2) Ain Sham University, Egypt; (3) Mansoura University, Egypt

**MP35** Circuit Model of UTC-PD with High Power and Enhanced Bandwidth Technique ; S. Khanra and *Abhirup Das Barman* ; University of Calcutta, India

**MP36** Angular orientation of micro-structured fiber by side imaging analysis ; Junxie Xie, Zhe Chen, *Yunhan Luo*, Huacai Huang, Jieyuan Tang, Junbin Fang, Jianhui Yu, Huihui Lu, Jun Zhang ; Jinan University, China

**MP37** Optimal Design of the fluorescence sensors based on step-index multimode optical fibers ; *Yingxin Zeng* (2,3), Zhe Chen (1,2), Rongsheng Chen (3), Yanbiao Liao (3), Jianhui Yu (1,2), Huihui Lu (1,2), Xindan Chen (1,2) ; (1) Guangdong Higher Education Institutes, China; (2) Jinan University, China; (3) South China Agricultural University, China

**MP38** Optimization of The Residual Radius of The Side-Polished Photonic Crystal Fiber Coupler ; Yue Ma, Zhe Chen, Qingsong Wei, *Yunhan Luo*, Xiaoli He, Zhen Che, Huihui Lu, Jianhui Yu, Jieyuan Tang, Jun Zhang ; Jinan University, China

**MP40** Quantum model for carrier capture time through phonon emission in InGaN/GaN LEDs ; Marco E. Vallone, *Francesco Bertazzi*, Michele Goano, Giovanni Ghione ; Politecnico di Torino, Italy

**MPD41** Self-pulsing and chaos in coupled ring resonators with non-instantaneous Kerr-nonlinear response ; *Yasa Eksioglu Ozok* and *Jiri Petracek*; Brno University of Technology, Czech Republic

**MPD42** Selecting the Right Growth-Plane within GaN Crystal for InGaN-based Yellow-Green or Yellow Lasers by Simulations ; *Mohammed Nadir* ; Tampere University of Technology, Finland

**MPD43** Modeling and Simulation of Reflecting SLEDs ; *Nicolai Matuschek* and M. Duell, Exalos AG, Switzerland

**MPD44** Hybrid Plasmonic Whispering-gallery-mode Ring Resonator at NanoScales ; Feifei Shi, *Chuanhong Liu*, Xin Gong, Zhaoyu Zhang; Peking University, China

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## **Tuesday, 2 September 2014**

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**Registration Desk opens 8:00**

### **8:30-10:20 Circuits and Systems**

Session Chair: *Michael Connelly*, University of Limerick, Ireland

**TuA1** Smart Techniques for Modelling Nanophotonic Circuits ; *Mohamed A. Swillam* ; The American University in Cairo, Egypt (invited)

**TuA2** Simulation of nonlinear optical resonator circuits ; *Thomas Van Vaerenbergh*, M. Fiers, J. Dambre and P. Bienstman ; Ghent University, Belgium

**TuA3** Mixed mode oscillations in a forced optoelectronic circuit for pattern and random bit generation ; B. Romeira (1), J. M. L. Figueiredo (1), *Julien Javaloyes* (2), O. Piro (2), Salvador Balle (3) ; (1) Universidade do Algarve, Portugal; (2) Universitat de les Illes Balears, Spain; (3) Institut Mediterrani d'Estudis Avançats, Spain

**TuA4** Simulation Result for Dynamic Range Extension in Coherent Optical Frequency Domain Reflectometry ; *Myoung Jin Kim*, Young Ho Kim, Eun Joo Jung, Woo-Jin Lee, Sung Hwan Hwang, and Byung Sup Rho ; Korea Photonics Technology Institute, Korea

**TuA5** Improved Performance of Colour Shift Keying using Voronoi Segmentation for Indoor Communication ; A. Halder and *Abhirup Das Barman* ; University of Calcutta, India

**10:20-10:50 Coffee Break**

### **10:50-12:40 Novel Devices**

Session Chair: *Mohamed Swillam*, The American University of Cairo, Egypt

**TuB1** Modelling and Design of MIR Chalcogenide Glass Fibre Lasers ; *Slawek Sujecki* (1), A. Oladeji (1), L. Sojka (1), A. Phillips (1), A.B. Seddon (1), T.M. Benson (1), H. Sakr (1), Z. Tang (1), D. Furniss (1), K. Scholle (2), S. Lamrini (2) and P. Furberg (2) ; (1) University of Nottingham, UK; (2) LISA laser products OHG Fuhrberg & Teichmann, Germany (invited)

**TuB2** Full-scale simulations of dielectric laser-driven accelerators ; *Benjamin M. Cowan* (1), G. I. Bell (1), R. J. England (2), R. J. Noble (2), E. A. Peralta (2), and K. Soong (2) ; (1) Tech-X Corporation, USA; (2) SLAC National Accelerator Laboratory, USA

**TuB3** A Numerical Investigation of Continuous Wave Parametric Gain in Silicon Nano Waveguides at Wavelengths around 1550 nm ; *Giannino Dziallas* (1), M. Jazajerifar (1), A.j Gajda (2), L. Zimmermann (2), K. Petermann (1) ; (1) Technische Universität Berlin, Germany; (2) IHP, Germany

**TuB4** Sensitive Surface Plasmon Resonance Biosensor Based on a Photonic Crystal and Bimetallic Configuration ; *Fang Wang*, Chaoying Chen, Peiling Mao, Yunhan Luo , Xiaolong Chen, Junbin Fang, Shuihua Peng, Jun Zhang, Jieyuan Tang, Huihui Lu, Zhe Chen, Jianhui Yu ; Jinan University, China

**TuB5** Design and Optimization of Multimode Fiber Sensor Based on Surface Plasmon Resonance ; *Peiling Mao* , Yunhan Luo , Xiaolong Chen, Junbin Fang, Hankai Huang, Chaoying Chen, Shuihua Peng, Jun Zhang, Jieyuan Tang, Huihui Lu, Zhe Chen, Jianhui Yu\* ; Jinan University, China

**12:40-14:10 Lunch Break** (individual)

### **14:10-15:50 Optical Amplifiers**

Session Chair: *Mindaugas Radziunas*, Weierstrass Institute, Germany

**TuC1** Ground and Excited-State Performance of an Quantum-Dot Semiconductor Amplifier ; *Benjamin Lingnau*, Eckehard Schöll, and Kathy Lüdge ; Technische Universität Berlin, Berlin

**TuC2** Wideband Steady-State Model of a Strained MQW-SOA ; *Michael J. Connelly* (1), S. Mazzucato (2), H. Carrere (2), X. Marie (2), T. Amand (2), M. Achouche (3), C. Caillaud (3) and R. Brenot (3) ; (1) University of Limerick, Ireland; (2) Université de Toulouse, France; (3) Alcatel Thales III-V Lab, France

**TuC3** Simulation of Polarization Effects in Solid State Lasers and Amplifiers ; *Christoph Pflaum*, Rainer Hartmann and Thomas Graupeter ; Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

**TuC4** Analysis of the performance of tapered semiconductor optical amplifiers: role of the taper angle ; *José-Manuel Tijero*, L. Borrueal, M. Vilera and I. Esquivias ; Universidad Politécnica de Madrid, Spain

**TuC5** Rules of Filamentation in Tapered Diode Amplifiers ; *Benjamin Dalin* (1), E. Pniel (1), S. Golod (2), Sh. Y. Goldin (1,2), E. Shekel (2) ; (1) Jerusalem College of Technology, Israel; (2) Civan Advanced Technologies Ltd., Israel

**15:50-16:20 Coffee Break**

### **16:20-18:10 Photonics**

Session Chair: *Slawek Sujecki*, University of Nottingham, UK

**TuD1** Recent progress in theory of nonlinear pulse propagation in optical fibers ; *Shalva Amiranashvili* (1), U. Bandelow (1), N. Akhmediev (2) ; (1) WIAS Berlin, Germany; (2) The Australian National University, Australia (invited)

**TuD2** Longitudinal mode analysis of multisection ring and edge-emitting semiconductor lasers ; *Mindaugas Radziunas* ; Weierstrass Institute, Germany

**TuD3** Numerical Results for Wavelength Conversion of Superchannels in a Periodically Poled Lithium Niobate Waveguide ; *Matteo Giacalone* (1), F. Fresi (1), G. Meloni (2) and L. Poti (2) ; (1) TeCip Institute Scuola Superiore Sant'Anna, Italy; (2) CNIT Institute, Italy

**TuD4** 3D-Simulation and Characterization of Subwavelength Grating Waveguides in SOI ; *Thomas Föhn* (1), N. Hoppe (1), W. Vogel(1), M. Schmidt (1), M. Félix Rosa (1), M. Berroth (1), J. Butschke (2), F. Letzkus (2) ; (1) University of Stuttgart, Germany; (2) Institute for Microelectronics Stuttgart, Germany

**TuD5** Quantum Waveguides Discontinuities Analysis ; Afaf M. A. Saeed, and Saleh S. A. Obayya ; Zewail City of Science and Technology, Egypt

### **20:00-22:00 Rump Session: GaN-LED Efficiency Droop**

Session Chair: *Joachim Piprek*, NUSOD Institute, USA

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## **Wednesday, 3 September 2014**

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**Registration Desk opens 8:00**

### **8:30-9:20 Novel Materials**

Session Chair: *Stanko Tomic*, University of Salford, UK

**WA1** Optical Metasurfaces Based on Gap Plasmon Resonators ; *Sergey I. Bozhevolnyi* ; University of Southern Denmark, Denmark (invited)

**WA3** Strong and Broadband Circular Dichroism based on Helix-like Chiral Metamaterials ; Ruonan Ji, *Shaowei Wang*, Xiaoshuang Chen and Wei Lu ; Shanghai Institute of Technical Physics, China

**9:20-9:50 Coffee Break**

### **9:50-11:20 Laser Diodes**

Session Chair: *Weng Chow*, Sandia National Labs, USA

**WB1** Time-localized Structures in Vertical-Cavity Surface-Emitting Lasers ; M. Marconi (1), J. Javaloyes (2), S. Balle (2), *Massimo Giudici* (1) ; (1)Institut Non Linéaire de Nice, France; (2) Universitat de les Illes Balears, Spain (invited)

**WB2** Passively mode-locked lasers subject to optical feedback: the role of amplitude-phase coupling ; *Lina Jaurigue*, E. Schöll and K Lüdge ; Technische Universität Berlin, Germany

**WB3** Investigations of External Cavity Diode Lasers: Simulations, Analysis and Experiments ; M.Radziunas (1), *Vasile Tronciu* (2), E. Luvsandamin (3), C. Kürbis (3), A.Wicht (3), H.Wenzel (3) ; (1)Weierstrass Institute, Germany; (2)Technical University of Moldova, Moldova; (3) Ferdinand Braun Institute, Germany

**WB4** Theoretical analysis of passively mode-locked inhomogeneously broadened lasers ; *Alexander Pimenov*, A. G. Vladimirov ; WIAS Berlin, Germany

### **11:30-12:20 Numerical Methods**

Session Chair: *Yuh-Renn Wu* ; National Taiwan University, Taiwan

**WC1** Modeling of multimode laser dynamics by means of delay differential equations ; *Andrei G. Vladimirov*, A. Pimenov, U. Bandelow ; WIAS Berlin, Germany (invited)

**WC2** On modifications of the Scharfetter-Gummel scheme for drift-diffusion equations with Fermi-like statistical distribution functions ; *Thomas Koprucki*, M. Kantner, J. Fuhrmann, K. Gärtner ; Weierstrass-Institute (WIAS Berlin), Germany

**12:20-14:00 Lunch Break** (individual)

**14:00-22:00 Conference Excursion & Dinner**



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## ***Thursday, 4 September 2014***

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**Registration Desk opens 8:00**

### **8:30-9:50 Solar Cells I**

Session Chair: *Weida Hu*, Shanghai Institute of Technical Physics, China

**ThA1** Design of Light Trapping Nanopatterned Solar Cells Based on Three-Dimensional Optical and Electrical Modeling ; Hui-Hsin Hsiao, Hung-Chun Chang, and *Yuh-Renn Wu* ; National Taiwan University, Taiwan

**ThA2** Prediction and prevention of defective regions within thin-film silicon solar cells ; *Martin Sever*, J. Krc, M. Topic ; University of Ljubljana, Slovenia

**ThA3** Optimization of interdigitated back contact geometry in silicon heterojunction solar cell ; *Miha Filipic*, F. Smole, M. Topic ; University of Ljubljana, Slovenia

**ThA5** Study of the Electrical Performance of n-GaAs sub-cells in InGaP/GaAs/Ge 3J Solar Cells under 1 MeV Electron Irradiation using Computer Simulation ; M. A. Cappelletti (1,2), *Guillermo A. Casas* (1,3), A. P. Cédola (1), and E. L. Peltzer y Blancá (1) ; (1) Universidad Nacional de La Plata, Argentina; (2) Universidad Nacional Arturo Jauretche, Argentina; (3) Universidad Nacional de Quilmes, Argentina

**9:50-10:20 Coffee Break**

### **10:20-11:40 Solar Cells II**

Session Chair: *Peter H. Handel*, Univ. of Missouri-St. Louis, USA

**ThB1** Simulation of semi-transparent organic tandem solar cells for solar shading ; *Jan Mescher*, S.-W. Kettlitz, N. Christ, M.-F.-G. Klein, A. Pütz, A. Mertens, A. Colsmann, and U. Lemmer ; Karlsruhe Institute of Technology, Germany

**ThB2** Combining structures on different length scales in ray tracing: Analysis of optical losses in solar cell modules ; *Matthias Winter* (1), Malte R. Vogt (1), Hendrik Holst (2), Pietro P. Altermatt (1) ; (1) Leibniz University Hannover, Germany; (2) Institute for Solar Energy Research Hamelin (ISFH), Germany

**ThB3** Studying the Effect of Scattering Layers on the Efficiency of Thin Film Solar Cells ; *Zhabiz Rahimi*, *Christoph Pflaum* ; Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

**ThB4** Photocurrent Enhancement in GaPNAs-based Solar Cells With Si Nanowire Array Substrate ; *Dmitrii A. Kudryashov* (1,2), A.S. Gudovskikh (1,2) ; (1) Saint-Petersburg Academic University, Russia; (2) Saint Petersburg Electrotechnical University, Russia

**11:40-13:10 Lunch Break** (individual)

### **13:10-15:00 Photodetectors**

Session Chair: *Slawek Sujecki*, University of Nottingham, UK

**ThC1** HOT HgCdTe infrared detectors ; *Piotr Martyniuk* ; Military University of Technology, Poland (invited)

**ThC2** Quantum Theory of 1/f Noise in Quantum Well Photodetectors ; *Peter H. Handel* (1) and A.M. Truong (2) ; (1) Univ. of Missouri, USA; (2) Southern Illinois Univ. Edwardsville, USA

**ThC3** Compensation for RC-effects in organic photodiodes with large sheet resistances ; *Siegfried Kettlitz*, J. Mescher, and U. Lemmer ; Karlsruhe Institute of Technology, Germany

**ThC4** Modeling of HgCdTe photoconductive infrared detector with metallic nanostructures ; *Jian Liang, Weida Hu, X. S. Chen, Z. F. Li, and W. Lu* ; Shanghai Institute of Technical Physics, China

**ThC5** PDL optimization of MQW pin PD ; *Gan Zhou, P. Runge* ; Fraunhofer Heinrich-Hertz-Institut, Germany

### **15:00-15:30 Coffee Break**

### **15:30-17:00 Post-Deadline Session**

Session Chair: *Joachim Piprek*, NUSOD Institute, USA

**ThPD1** Instability of FD-BPM when applied in semiconductor laser modelling ; *Slawek Sujecki*, University of Nottingham, UK

**ThPD2** A Numerical Study of Line-Edge Roughness in Graphene Superlattice-Based Photodetectors ; *Mahdi Moradinasab* (2)(1) , M. Pourfath (2)(1), M. Fathipour (2), and H. Kosina(1); (1) Vienna Technical University, Austria; (2) University of Tehran, Iran

**ThPD3** Simultaneous prediction of two independent chaotic time series using semiconductor ring lasers with optical feedback ; *Romain Modeste Nguimdo*, Guy Verschaffelt, Jan Danckaert, and Guy Van der Sande; Vrije University Brussel, Belgium

**ThPD4** UWB Analogous Optical Link Based on a Quantum-Dot-in-a-Well (QDWELL) Laser ; *Yossef Ben Ezra* and Boris I. Lembrikov; Holon Institute of Technology, Israel

**ThPD5** Asymptotic and numerical analysis of semiconductor ring lasers with negative optoelectronic and incoherent optical feedback; *Sifeu Takougang Kingni* (1,2), G. Van der Sande (1), Ilya V. Ermakov (3) and J. Danckaert (1); (1) Vrije Universiteit Brussel, Belgium; (2) University of Yaoundé I, Cameroon; (3) Université catholique de Louvain, Belgium

**ThPD6** Numerical investigation of optical gain in tensile strained germanium layers for near infra-red lasers ; O. Aldaghri, Z. Ikonik and *R. W. Kelsall*; University of Leeds, UK