



PhoxTroT – 3rd Symposium on Optical Interconnect in Data Centers

29 September 2015, Valencia, Spain



The event is organized by the EU project **PhoxTroT**



www.phoxtrot.eu

with the support of, **IEEE CPMT** German Chapter, **ECO** and **EPIC**.



3rd Optical Interconnect in Data Centers Symposium

The 3rd Symposium is collocated with ECOC 2015. The symposium is focused on *high-performance, low-energy and cost and small-size* optical interconnects across the different hierarchy levels in data center and high-performance computing systems: on-board, board-to-board and rack-to-rack.

Invited Speakers and Session Chairs

- ★ Andreas Hakansson, Fraunhofer IZM, Germany
- ★ Antoine Brimont, UPV-VNTC, Spain
- ★ Arjen Bakker, Phoenix Software, Netherlands
- ★ Benoit Charbonnier, CEA LETI, France
- ★ Christian Neumeyr, Vertilas, Germany
- ★ Dimitris Apostolopoulos, ICCS / NTUA, Greece
- ★ Domenico Tulli, DAS Photonics, Spain
- ★ Elad Mentovich, Mellanox, Israel
- ★ Emmanouel Varvarigos, CTI 'Diophantus', Greece
- ★ Guang-Hua Duan, III-V Lab, France
- ★ Hideyuki Nasu, Furukawa, Japan
- ★ Jeroen Duis, TE Connectivity, Netherlands
- ★ Jochen Kraft, ams, Austria
- ★ Katharine Schmidtke, Facebook, United States
- ★ Kazuhiko Kurata, PETRA, NEC, Japan
- ★ Lars Zimmermann, IHP, Germany
- ★ Lê Nguyễn Bình, Huawei, Germany
- ★ Marika Immonen, TTM Mail Finland, Hong Kong
- ★ Nikos Pleros, AUTH / CERTH, Greece
- ★ Peter De Dobbelaere, Luxtera, CA, United States
- ★ Peter J. Winzer, Bell Labs, NJ, United States
- ★ Richard Pitwon, Seagate, United Kingdom
- ★ Ronald Broeke, Bright Photonics, Netherlands
- ★ Takaaki Ishigure, Keio University, Japan
- ★ Thomas H. Toifl, IBM Zurich, Switzerland
- ★ Tolga Tekin, Fraunhofer IZM / TU Berlin, Germany

Symposium Sessions

Tuesday, 29 September 2015

Room: **Joaquin Rodrigo suite 1** at Feria Valencia CCE

- 8:15 Welcome
- 8:30-10:30 Cloud Data Centers
- 10:50-12:50 Embedded Optical Modules for Data Centers
- 13:00-13:50 Symposium Lunch
- 14:00-16:00 Components & Systems for Data Centers
- 16:20-18:20 Photonics Integration for Data Centers

Registration: FREE of charge REGISTRATION MANDATORY

www.epic-assoc.com/3rd-optical-interconnect-in-data-centers-symposium/

Tuesday 29 September 2015

- 8:15** **WELCOME**
by PhoxTroT
- 8:30 – 10:30** **CLOUD DATA CENTERS**
Session Chair: Emmanouel Varvarigos
- 8:30 **Lê Nguyễn Bình,**
'Modulation and interconnection for Exa/Zeta-bps optical Networks'
Technical Director, European Research Centre, Huawei Technologies, Germany
- 8:50 **Katharine Schmidtke,**
'Facebook network architecture and its impact on interconnects'
Strategic Sourcing Manager, Optical Technology, Facebook, United States
- 9:10 **Richard Pitwon,**
'Evolution of optical interconnect technologies and architectures for exascale data centres'
Director, Photonics Research and Development, Cloud Systems & Solutions, Seagate Technology, United Kingdom
- 9:30 **Peter J. Winzer,**
'High-Capacity Systems for Mega-Datacenter Interconnects'
Head the Optical Transmission Systems and Networks Research Department, Bell Labs, NJ, United States
- 9:50 **Kazuhiko Kurata,**
'Next gen datacenter interconnects, the challenges from a manufacturers perspective'
Senior Manager, Nano Electronics Research Labs., NEC Corporation, Japan
- 10:10 Round table discussion
- 10:30 **Coffee Break**
- 10:50 – 13:00** **EMBEDDED OPTICAL MODULES FOR DATA CENTERS**
Session Chair: Andreas Hakansson
- 10:50 **Jeroen Duis,**
'A glimpse into the PhoxTroT AOC technology'
Technology Incubator and Team Leader, Optics Future Technology Center EMEA, TE Connectivity, Netherlands
- 11:10 **Thomas H. Toifl,**
'ADDAPT - Adaptive data and power aware transceivers for 56Gb/s ultra-low power optical links'
Manager I/O Link Technology, IBM Zürich, Switzerland
- 11:30 **Elad Mentovich,**
'LinkX surprises for 100Gb/s and above, what can we tell?'
Principal Engineer, Process Technologies, Mellanox Technologies, Israel
- 11:50 **Peter De Dobbelaere,**
'Reduced power dissipation for optical interconnect by closer onto-electronic integration'
Vice President of Engineering, Luxtera, CA, United States
- 12:10 **Hideyuki Nasu,**
'Polymer waveguide-coupled solderable optical modules for high-density optical interconnects'
Product Manager, Furukawa Electric, Japan
- 12:30 Round table discussion
- 13:00 **Lunch**

14:00 – 16:00 COMPONENTS & SYSTEMS FOR DATA CENTERS

Session Chair: Dimitris Apostolopoulos

- 14:00 **Christian Neumeyr,**
'Long-wavelength VCSELs for advanced optical communications systems'
Chief Executive Officer, Vertilas, Germany
- 14:20 **Antoine Brimont,**
'Are Electro-optic silicon photonic modulators and switches ready for demanding applications?'
Senior Research Engineer, UPV - Valencia Nanophotonics Technology Center, Spain
- 14:40 **Takaaki Ishigure,**
'Polymer waveguide for 3-D on-board optical circuits'
Professor, Dept. of Applied Physics and Physico-Informatics, Keio University, Japan
- 15:00 **Domenico Tulli,**
'PhoxTroT: Single-mode optical interconnect platform'
Senior Photonic Engineer, Das Photonics, Spain
- 15:20 **Ronald Broeke,**
'PIC design across platforms'
CEO, Bright Photonics, Netherlands
- 15:40 Round table discussion
- 16:00 **Coffee Break**

16:20 – 18:30 PHOTONICS INTEGRATION FOR DATA CENTERS

Session Chair: Nikos Pleros

- 16:20 **Marika Immonen,**
'On-board optical interconnects development in PhoxTroT'
Manager of R&D Optical Interconnects, TTM Technologies, Finland
- 16:40 **Jochen Kraft,**
'Manufacturing of 3D-integrated Optoelectronic and Photonic ICs and Systems'
Principal Development Engineer, ams, Austria
- 17:00 **Guang-Hua Duan and Benoit Charbonnier,**
'Hybrid III-V Silicon Photonic Integrated Circuits for Optical Interconnect'
Team Manager, III-V Lab and CEA LETI, France
- 17:20 **Lars Zimmermann,**
'Photonic BiCMOS – a silicon photonic integration platform for high-speed communications'
Team Leader Silicon Photonics Technologies, IHP, Germany
- 17:40 **Arjen Bakker,**
'An integral approach to PIC design - software, libraries and design kits'
CTO, PhoeniX Software, Netherlands
- 18:00 Round table discussion
- 18:30 END OF SYMPOSIUM**

General Information

Welcome Coffee - Onsite registration

Tuesday 29 September 8:00 to 10:00

Symposium Registration

Includes admission to symposium sessions, symposium coffee breaks, and symposium lunch.

www.epic-assoc.com/3rd-optical-interconnect-in-data-centers-symposium/

Symposium Venue

Joaquin
Rodrigo Suite,

collocated
with ECOC
2015



The symposium will be held in **Joaquin Rodrigo suite 1** at Feria Valencia Convention and Exhibition Centre (CCE) collocated with ECOC 2015, Valencia, Spain.

Supporters



Technical Program Committee

- Richard Pitwon, Seagate, United Kingdom
- Emmanouel Varvarigos, CTI 'Diophantus', Greece
- Nikos Pleros, AUTH / CERTH, Greece
- Dimitris Apostolopoulos, ICCS / NTUA, Greece
- Andreas Hakansson, Fraunhofer IZM, Germany
- Tolga Tekin, Fraunhofer IZM / TU Berlin, Germany

Organizing Committee

- Tolga Tekin, Fraunhofer IZM: tolga.tekin@izm.fraunhofer.de
- Carlos Lee, EPIC: carlos.lee@epic-assoc.com

PhoxTroT.eu is focusing on on-board, board-to-board and rack-to-rack optical interconnects. The goal of this large-scale EU research effort is the deployment of optimized technologies to tailor dedicated interconnect layers towards high-performance, low-energy and low-cost Data Center and High-Performance Computing Systems. A "mix & match" technology by synergizing the different fabrication platforms such as CMOS electronics, Si-photonics, polymers, glass, III-Vs, and plasmonics will enable generic building blocks (transmitters, modulators, receivers, switches, optochips, multi- and single-mode optical PCBs, chip- and board-to-board connectors) to extend the performance beyond Tb/s and to reduce the energy by more than 50%.



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Coordinator: Fraunhofer-Gesellschaft. Dr. Tolga Tekin, Fraunhofer Institute for Reliability and Microintegration IZM, Gustav-Meyer-Allee 25, 13355 Berlin, Germany

