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Optical Interconnects Conference 2017

5-7 June 2017
Hilton Santa Fe Historic Plaza
Santa Fe, New Mexico USA

MaA - Welcome & Plenary I 8:30am-9:45am - Mesa Ballroom Welcome & Plenary I

MaA1: Silicon Photonics and the Future of Optical Connectivity in the Data Center (Page 1)
Thomas Liljeberg *(Intel Corporation)*

MB - Silicon Photonics 10:15am-11:45am - Mesa Ballroom

MB1: Use of 3D Technology for Silicon Photonics (Page N/A)
Sylvie Menezo *(CEA-LETI)*

MB2: Intermodulation Crosstalk of Graphene-Enabled Electro-Optic Microring Modulators for DWDM Interconnects (Page 3)
Nathan C. Abrams *(Columbia University)*
Meisam Bahadori *(Columbia University)*
Christopher T. Phare *(Columbia University)*
Michal Lipson *(Columbia University)*
Keren Bergman *(Columbia University)*

MB3: A Two-Segment Optical daC 40 Gb/s PaM4 Silicon Microring Resonator Modulator Transmitter in 65nm CMoS (Page 5)
Ashkan Roshan-Zamir *(Texas A&M University)*
Binhao Wang *(Texas A&M University)*
Shashank Telaprolu *(Texas A&M University)*
Kunzhi Yu *(Texas A&M University)*
Cheng Li *(Hewlett-Packard Enterprise)*
M. Ashkan Seyedi *(Hewlett-Packard Enterprise)*
Marco Fiorentino *(Hewlett-Packard Enterprise)*
Raymond Beausoleil *(Hewlett-Packard Enterprise)*
Samuel Palermo *(Texas A&M University)*

MB4: Comparison of DAC-less PAM4 Modulation in Segmented Ring Resonator and Dual Cascaded Ring Resonator (Page 7)
Anthony H. K. Park *(University of British Columbia)*
Ajith S. Ramani *(University of British Columbia)*
Lukas Chrostowski *(University of British Columbia)*
Sudip Shekhar *(University of British Columbia)*

MB5: 29-GHz Small-signal Modulation Bandwidth for Directly Current-modulated 980-nm Oxide-aperture VCSELs (Page 9)
Ricardo Rosales *(Technische Universität Berlin)*
Philip Moser *(Stanford University)*
James A. Lott *(Technische Universität Berlin)*

MC - Advance Devices 1:15pm-3:15pm - Mesa Ballroom

MC1: Photonic Integration in Commercial Manufacturing Lines (Page N/A)
Ajey Jacob *(Sandia National Laboratories)*

MC2: Characterization of Systematic Process Variation in a Silicon Photonic Platform (Page 11)
Nicholas Boynton *(Sandia National Laboratories and University of New Mexico)*
Andrew Pomerene *(Sandia National Laboratories)*
Andrew Starbuck *(Sandia National Laboratories)*
Anthony Lentine *(Sandia National Laboratories)*
Christopher T. DeRose *(Sandia National Laboratories)*

MC3: Scalable and Broadband Silicon Photonics Chip to Fiber Optical Interface Using Polymer Waveguides (Page 13)
Antonio La Porta *(IBM Research - Zurich)*
Roger Dangel *(IBM Research - Zurich)*
Daniel Jubin *(IBM Research - Zurich)*
Norbert Meier *(IBM Research - Zurich)*
Folkert Horst *(IBM Research - Zurich)*
Bert Jan Offrein *(IBM Research - Zurich)*

MC4: Substrate Removal for Ultra Efficient Silicon Heater-Modulators (Page 15)
Nicholas J. D. Martinez *(Sandia National Laboratories)*
Christopher T. DeRose *(Sandia National Laboratories)*
Robert Jarecki *(Sandia National Laboratories)*
Andrew L. Starbuck *(Sandia National Laboratories)*
Andrew T. Pomerene *(Sandia National Laboratories)*
Douglas C. Trotter *(Sandia National Laboratories)*
Anthony L. Lentine *(Sandia National Laboratories)*

MC5: The Benefit of Mid-board Optic and Other Flyover Technology (Page 17)
Fred Coppinger *(Samtec Inc.)*
David Langsam *(Samtec Inc.)*
Adam Page *(Samtec Inc.)*
Marc Verdiell *(Samtec Inc.)*

MC6: Hybrid Optical Engines for On-board Optical Applications (Page N/A)
Bardia Pezeshki *(Kaiam Corp)*

TuAa - Plenary II 8:30am-9:45am - Mesa Ballroom

TuAa1: Attojoule Optoelectronics - Saving More Energy with Optics (Page 19)
David A. B. Miller *(Stanford University)*

TuAa2: Programmable Optical Power Distribution in Silicon Photonic Platform (Page 21)
Alexander Gazman *(Columbia University)*
Meisam Bahadori *(Columbia University)*
Ziyi Zhu *(Columbia University)*
Keren Bergman *(Columbia University)*

TuAa3: Integrated Fresnel Zone Plate in the SOI Backend for Improved Laser to Chip Coupling Efficiency (Page 23)
M. Henniges *(Sicoya GmbH and Technische Universität Berlin)*
S. Meister *(Sicoya GmbH)*
H. Rhee *(Sicoya GmbH)*
C. Theiss *(Sicoya GmbH)*
H. Robers *(Technische Universität Berlin)*
M. Grehn *(Sicoya GmbH)*
D. Stolarek *(IHP)*
L. Zimmermann *(IHP)*
U. Woggon *(Technische Universität Berlin)*

TuB - Next Generation Data Centers 10:15am-11:45am - Mesa Ballroom

TuB1: Roadmap to Optical I/O (Page N/A)
Brad Booth *(Microsoft)*

TuB2: Application Regime and Distortion Metric for Multivariate RF Photonics (Page 25)
A. N. Tait *(Princeton University)*
T. Ferreira de Lima *(Princeton University)*
M. P. Chang *(Princeton University)*
M. A. Nahmias *(Princeton University)*
B. J. Shastri *(Princeton University)*
P. R. Prucnal *(Princeton University)*

TuB3: Flexible On-chip Frequency Comb Generation Using a SOI Dual-drive MZM (Page 27)
Jiachuan Lin *(Université Laval)*
Hassan Sepehrian *(Université Laval)*
Leslie A. Rusch *(Université Laval)*
Wei Shi *(Université Laval)*

TuB4: Microprocessor with Photonics I/O (Page N/A)
Chen Sun *(Ayer Lab)*

TuC - High Speed Communication I 1:15pm-3:15pm - Mesa Ballroom

TuC1: DSP Solutions for Next Generation Intra and Inter-data Center Connectivity (Page N/A)
Sudeep Bhoja *(Inphi)*

TuC2: Real-Time 100 Gb/s NRZ-OOK Transmission with a Silicon Photonics GeSi Electro-Absorption Modulator (Page 29)
J. Verbist *(Ghent University - IMEC)*
M. Verplaetse *(Ghent University - IMEC)*
S. A. Srinivasan *(Ghent University - IMEC and IMEC)*
P. De Heyn *(IMEC)*
T. De Keulenaer *(Ghent University - IMEC)*
R. Vaernewyck *(Ghent University - IMEC)*
R. Pierco *(Ghent University - IMEC)*
A. Vyncke *(Ghent University - IMEC)*
P. Verheyen *(IMEC)*
S. Balakrishnan *(IMEC)*
G. Leplage *(IMEC)*
M. Pantouvaki *(IMEC)*
P. Absil *(IMEC)*
X. Yin *(Ghent University - IMEC)*
G. Roelkens *(Ghent University - IMEC)*
G. Torfs *(Ghent University - IMEC)*

J. Van Campenhout *(IMEC)*
J. Bauwelinck *(Ghent University - IMEC)*

TuC3: 56 Gb/s Direct Modulation of an InP-on-Si DFB Laser Diode (Page 31)
A. Abbasi *(Ghent University - IMEC)*
B. Moeneclaey *(Ghent University - IMEC)*
J. Verbist *(Ghent University - IMEC)*
X. Yin *(Ghent University - IMEC)*
J. Bauwelinck *(Ghent University - IMEC)*
G. Roelkens *(Ghent University - IMEC)*
G. Morthier *(Ghent University - IMEC)*

TuC4: Towards Efficient 100 Gb/s Serial Rate Optical Interconnects: a Duobinary Way (Page 33)
X. Yin *(Ghent University - IMEC)*
M. Verplaetse *(Ghent University - IMEC)*
L. Breyne *(Ghent University - IMEC)*
J. Van Kerrebrouck *(Ghent University - IMEC)*
T. De Keulenaer *(Ghent University - IMEC)*
A. Vyncke *(Ghent University - IMEC)*
R. Pierco *(Ghent University - IMEC)*
R. Vaernewyck *(Ghent University - IMEC)*
S. Spiga *(TUM)*
M.-C. Amann *(TUM)*
J. Chen *(KTH)*
G. Van Steenberge *(Ghent University - IMEC)*
G. Torfs *(Ghent University - IMEC)*
J. Bauwelinck *(Ghent University - IMEC)*

TuC5: 100G Transition: Electrical & Optical, Challenges & Opportunities (Page 35)
Francessco Caggioni *(MACOM)*

WAa - Energy Efficiency 8:30am-9:45am - Mesa Ballroom

WAa1: Datacenter Optical Interconnects: Requirements and Challenges (Page 37)
Chongjin Xie *(Alibaba Group)*

WAa2: Scalability of Microring-Based Crossbar for All-to-All Optical Interconnects (Page 39)
Xian Xiao *(University of California, Davis)*
Roberto Proietti *(University of California, Davis)*
S. J. Ben Yoo *(University of California, Davis)*

WAa3: Highly Scalable, Low-Crosstalk Architecture for Ring-Based Optical Space Switch Fabrics (Page 41)
Qixiang Cheng *(Columbia University)*
Meisam Bahadori *(Columbia University)*
Sébastien Rumley *(Columbia University)*
Keren Bergman *(Columbia University)*

WAa4: Accelerated Out-of-Band Arbitration of a Microring-Based Silicon Photonic System (Page 43)
David M. Calhoun *(Columbia University)*
Erik F. Anderson *(Columbia University)*
M. H. N. Hattink *(Columbia University)*
Sébastien Rumley *(Columbia University)*
Keren Bergman *(Columbia University)*

WB - High Speed Communication II 10:15am-11:45am - Mesa Ballroom

WB1: Silicon Photonics for Nx56G NRZ Optical Interconnects (Page N/A)
Joris Van Campenhout *(IMEC)*

WB2: A 48-Gb/s Software Defined Optical Transceiver Using Multi-tone PAM/CAP Modulation (Page 45)
Fan Yang *(Shanghai Jiao Tong University)*
Wenjia Zhang *(Shanghai Jiao Tong University)*
Zuyuan He *(Shanghai Jiao Tong University)*

WB3: Machine Learning of SVM Classification Utilizing Complete Binary Tree Structure for PAM-4/8 Optical Interconnection (Page 47)
Guoyao Chen *(Shanghai Jiao Tong University)*
Lin Sun *(Shanghai Jiao Tong University)*
Ke Xu *(Harbin Institute of Technology)*
Jiangbing Du *(Shanghai Jiao Tong University)*
Zuyuan He *(Shanghai Jiao Tong University)*

WB4: High-Capacity PAM4 and DMT for Short Reach Interconnects (Page N/A)
Jeffrey Lee

WC - VCSEL and Advance Communication 1:15pm-3:00pm - Mesa Ballroom

WC1: VCSeL Based SWDM Links for Data Centers (Page 49)
Chris Kocot *(Finisar Corp.)*
Anna Tatarczak *(Finisar Corp.)*
Jim A. Tatum *(Finisar Corp.)*

WC2: 30 Gbit/s 1.7 pJ/bit Common-Cathode Tunable 850-nm-VCSEL Driver in 28 nm Digital CMOS (Page 51)
Laszlo Szilagyi *(Technische Universität Dresden)*
Guido Belfiore *(Technische Universität Dresden)*

Ronny Henker *(Technische Universität Dresden)*
Frank Ellinger *(Technische Universität Dresden)*

WC3: VCSeL Modulation Capacity: Continued Improvements or Physical Limits? (Page 53)
A. Larsson *(Chalmers University of Technology)*
J. S. Gustavsson *(Chalmers University of Technology)*
E. Haglund *(Chalmers University of Technology)*
E. P. Haglund *(Chalmers University of Technology)*
T. Lengyel *(Chalmers University of Technology)*
E. Simpanen *(Chalmers University of Technology)*
M. Jahed *(Chalmers University of Technology)*

WC4: High Capacity SWDM PAM4 Transmissions over NG-WBMMF at Extended Reach (Page 55)
Y. Sun *(OFS Fitel, LLC)*
F. Chang *(Inphi Corp.)*
K. Scott *(OFS Fitel, LLC)*
R. Lingle Jr. *(OFS Fitel, LLC)*
T. Gray *(Finisar Corp.)*
J. Tatum *(Finisar corp.)*
S. Bhjoa *(Inphi Corp.)*

WC5: Proposal of Isolator-free Optical Interconnect Using Low-noise Graded-index Plastic Optical Fiber for Pluggable 4K/8K Optical Interface (Page 57)
Azusa Inoue *(Keio University)*
Yasuhiro Koike *(Keio University)*