An Integrated Photonics Reservoir Computing Approach to Signal Equalization for Telecommunications

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ABSTRACT
Photonics Reservoir Computing is a brain-inspired computing approach that brings the fast speeds and enormous bandwidth associated with lightwave technology together with the versatility of machine learning to enable the efficient computation of tasks requiring a finite amount of memory such as speech recognition, series prediction, header recognition etc. Broadly, our efforts focus on applying photonic reservoir computing implemented with the Silicon on Insulator (SOI) CMOS-compatible primitives to develop applications in the optical telecommunications space to take advantage of the aforementioned advantages. Specifically, this work presents our results on the implementation of a passive photonic reservoir chip that can be positioned at the receiver of a short or long metro link to invert impairments introduced to the optical transmitted signal due to a variety of imperfections and noise sources.
Tu C1.5 Single-frequency radiation from DFB fiber laser: Numerical analysis by the method of single expression (Invited)
N. Baskaran, T. Krzyzaniak, T. Hovhannisyan, M. Marcinko

Tu C6.6 Ultra-high power narrow band tunable DFB lasers for telecom applications
Yaping Zhang

Coffee break (15:55-16:20)

ICTON VII
Chair: Sergey Sergeyevsky
(10:30-1:15, Tuesday, July 12)

Tu D1.1 Comparison of linear and nonlinear equalization for ultra-high capacity spectrally-lean superchannels (Invited)
V. Vugov, P. Chevauroir, S. Erkhtin, R. Bouznine, A. Tomaček, M. Nazarathy, R. Klíry, I. Tomkos

Tu D2.2 Impact of demand uncertainty models on FTTH network design (Invited)
M. Ziółkowski, M. Mycek

Tu D3.3 Influence of the super-channel guard-band width on the performance of dynamic flex-grid SDM optical core networks (Invited)

Tu D4.4 Recent advances in optical and hybrid packet switching (Invited)
G. Ware, W. Samoud, P. Gray, M. Loudou

Coffee break (15:20-15:50)

ICTON VIII
Chair: Josep Prat
(16:00-17:20, Tuesday, July 12)

Tu D3.1 Do "master-slave" architectures make sense for optical interconnect? (Invited)
S. Suris, M. Kshiga, V. Curri, S. Abate

Tu D3.2 Impact of tunability and fabrication on optical slot switching ring performance (Invited)
N. Benzouia, Y. Pointurier

Tu D3.4 Silver nanoparticles in lithium disilicate host as plasmonic absorbers (Invited)

Tu D4.3 Infrared emitting cadmium-doped silicon quantum dots for silicon-based 3D hybrid technology (Invited)

Coffee break (16:30-17:00)

Coffee break (16:40-17:10)

Coffee break (16:50-17:20)

Coffee break (17:00-17:30)

Coffee break (17:15-17:45)

Coffee break (17:30-18:00)

Coffee break (18:00-18:30)

Coffee break (18:15-18:45)

Coffee break (18:30-19:00)

Coffee break (19:00-20:00)

Coffee break (19:15-20:15)

Coffee break (20:15-20:45)

Coffee break (20:30-21:00)

Coffee break (21:00-21:30)

Coffee break (21:15-21:45)

Coffee break (21:30-22:00)

Coffee break (22:00-22:30)

Coffee break (22:15-22:45)

Coffee break (22:30-23:00)

Coffee break (23:00-23:30)

Coffee break (23:15-23:45)
10:40 Th B1.2 Evaluation of the hybrid FTTx/DSL2-vDSL2 transition approach in an access network (Invited)
M. Attenasio, A. Valenti, F. Persia, A. Rufini, S. Penna, D. Del Buono, G. Verdile, G. Maler

11:00 Th B1.3 Open FTTx networks and digital home care services: Experiences from the Connected for Health project (Invited)
M. Forzati

11:20 Th B1.4 Technical and market feasibility of high-speed software-reconfigurable ODFM/OFDM-based optical transceivers for next generation access network PONs (Invited)
R.M. Doward, M.J. Andersen, R.P. Giddings

11:40 Th R9.4 Experimental demonstration of simultaneous transmission of LTE-A multi band and Gigabit 4-PAM signals up to 50 m of large area graded-index POF
P. Forin, Y. Shi, H.P.A. van den Boom, E. Tangeloge, A.M.J. Koonen

11:00 Th B2.2 Dispersion and off-set filtering in RBOA-based networks (Invited)
E. Udvardy, A. Schranz, B. Malolcy

11:30 Th B2.3 Server-centric PON data center architecture (Invited)
J. Ladawnzky

11:50 Th B4.4 Network and datacenter resource orchestration strategies for mobile virtual networks over telenet clouds (Invited)
I. Cesari, M. Gharbouli, I. Cerutti, P. Castoldi

12:00 Th B5.1 Low-coat 100 Gbps transport solution based on DCO-CFP and G.657.A2 fibre for longhaul WDM transmission (Invited)

12:05 Th B5.5 Greening big data networks: Volume impact (Invited)

12:45 Th B5.3 A framework for energy efficient NFV in 5G networks
A. Al-Quzeeni, A. Lawey, T. El-Gorashi, J.M.H. Elmirghani

13:00 Th B5.7 Network coding for energy efficiency in bypass PON/WDM networks
M.O.I. Mune, T.C.II. El-Gorashi, J.M.H. Elmirghani

PLENARY (Thursday, July 14, 12:30-12:50) Auditorium

12:30 Th C1 Challenges and future trends in fiber lasers (Invited)

(Thursday, July 14, 12:50) Closing Ceremony and Announcement of ICTON 2017 Auditorium

13:10 Lunch