



LABORATOIRE DE TECHNOLOGIES DE RESEAUX

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The *Laboratoire de technologies de réseaux* includes an optical layer networking infrastructure composed of 18 network nodes equipped with 5 fully-equipped metropolitan, and long haul WDM systems, a DP-QPSK 40G live optical link, a 10G optical recirculating loop, as well as a silicon photonics test bed that are used for research and teaching on advanced optical fiber transmission technologies and networks. The research interests are in the area of optical communications and include flexible coherent (filterless) optical networking, optical layer characterization, field experiments using coherent systems, as well as silicon photonics.



CURRENT RESEARCH ACTIVITIES

Filterless optical networking

Exploration of flexible network architectures based on coherent transceiver technology and filterless concepts. Network design, RWA/RSA, link engineering, control plane. Metro, core and submarine network applications.

Collaboration Ciena; Royal Institute of Technology KTH, Sweden. Telecommunication Systems DOI: [10.1007/s11235-013-9725-y](https://doi.org/10.1007/s11235-013-9725-y)

Field experiments using 40G DP-QPSK coherent systems

Optical performance monitoring using coherent modems. Experimental and theoretical analysis of polarization effects on fiber routes of coherent core networks carrying live traffic. Collaboration Verizon, USA; Ciena

Silicon microring resonator devices for energy efficient switching applications

Theoretical and experimental study of integrated optic devices based on silicon microring resonators for switching and signal processing applications. Collaboration Shanghai Jiao Tong University, China

Optical layer test bed

10G WDM recirculating loop test bed. Component characterization at the system level (ROADM, silicon photonic devices, etc.). Physical layer impairments, performance measurements and dynamic effects in optically amplified links. Small-scale optical networking experiments.

Optical layer modeling

Physical layer and link engineering models for core, metro and access networks. Silicon photonic device modeling. *VPItransmissionMakerTM*, Matlab, OMNeT++/PhoenixSim, OPNET, NetCalc Optical Planner, etc.

IMMEDIATE OPENINGS (PhD, Master's, internship, post-doc). Send your CV to christine.tremblay@etsmtl.ca

SHORT COURSES (<http://www.ofcconference.org>)

SC314 Hands-on Fiber Characterization for the Engineering of Long Haul and Metro Deployments

Daniel Peterson, Verizon, USA; Christine Tremblay, École de technologie supérieure, Canada

SC210 Hands-on Polarization-Related Measurements

Daniel Peterson, Verizon, USA ; Tasshi Dennis, NIST, USA ; Brian Teipen, ADVA Optical Networking, USA ; Christine Tremblay, École de technologie supérieure, Canada

08/2013

OFC 2014
The future of optical networking
and communications is here.