



**UNIVERSITÀ
DI PARMA**

DEPARTMENT OF ENGINEERING
AND ARCHITECTURE

Seminar

Wednesday, October 17th, 2018, 8:30 am

Room 5, Engineering Building

“Transporting Data on the Orbital Angular Momentum of Light”

Prof. Leslie A. Rusch

Department of Electrical and Computer Engineering

Laval University

Sainte-Foy (Québec), Canada

The use of optical fiber cable to achieve enormous bandwidth expansion has become *de rigueur*. Communications engineers have been working miracles for decades by weaving together the most appropriate combination of available multiplexing strategies over single mode optical fiber. The price per bit per kilometer in optical communications has plummeted again and again as new components and fibers have stretched the carrying capacity of each multiplexing dimension. Despite these advances, short-haul requirements continue to grow and are expected to exceed the capacity of simple single mode fiber transmission. Spatial multiplexing is a new technique in fiber communications allowing fiber capacity to grow in another dimension by carrying signals on multiple modes of light. The short length and high capacity requirements for data center and front-haul links make them well suited for exploitation of orbital angular momentum (OAM) of light in spatial multiplexing, as they hold the promise of low correlation among modes.

Leslie A. Rusch received the B.S.E.E. degree (with honors) from the California Institute of Technology, Pasadena, in 1980 and the M.A. and Ph.D. degrees in electrical engineering from Princeton University, Princeton, NJ, in 1992 and 1994, respectively. She currently holds a Canada Research Chair in Communications Systems Enabling the Cloud in the Department of Electrical and Computer Engineering at Université Laval (UL), QC, Canada. She is Fellow of the IEEE and OSA and a member of the Centre for Optics, Photonics and Lasers at UL. Dr. Rusch has experience in defense, industrial and academic communications research. Prof. Rusch is the recipient of the IEEE Canada Fessenden award for Contributions to Telecommunications. She is an elected member of the Board of Governors of IEEE Photonics Society. She has served on multiple technical program committees for major international conferences, and as an associate editor of the IEEE/OSA Journal of Optical Communications Networks and the IEEE Communications Letters. Prof. Rusch has published over 300 articles and been cited over 5750 times per Google Scholar. Prof. Rusch has won numerous awards for training graduate students, including the IEEE Canada Ham Award for Graduate Supervision. Her research interests include digital signal processing for coherent detection in optical communications using silicon photonic devices, spatial multiplexing using orbital angular momentum modes in fiber, radio over fiber and OFDM for passive optical networks.

For more information: Alberto Bononi alberto.bononi@unipr.it, Federica Poli federica.poli@unipr.it, Paolo Serena paolo.serena@unipr.it

UNIVERSITÀ DI PARMA

Parco Area delle Scienze, 181/A - 43124 Parma - Italy

www.unipr.it