



2pm, Friday 7 December 2012

Seminar Room

Cockcroft/Oliphant Link Building 58d, Mills Road, ANU



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Ultra-High Capacity Optical Transmission Systems

Abstract

With the remorseless growth in demand for telecommunication services, the capacity of optical fiber links first exceeded the capabilities of electronics, requiring the introduction of wavelength division multiplexing, and is now approaching a fundamental limit. This limit is due to a trade-off between the familiar Shannon limit at low signal powers, and nonlinear effects at high powers. Before considering the implications of the capacity crunch when demand finally hits this limit, this lecture will review the technological achievements which took the industry from its first commercial service with the Dorset (UK) police in 1975 through to the 10 Tbit/s systems of today.

Biography

Dr. Andrew Ellis was born in Underwood, England in 1965 and gained a BSc in Physics with a minor in mathematics from the University of Sussex, Brighton, England in 1987. He was awarded his PhD in Electronic and Electrical Engineering from The University of Aston in Birmingham, Birmingham, England in 1997 for his study on All Optical Networking beyond 10 Gbit/s.

He previously worked for British Telecom Research Laboratories as a Senior Research Engineer investigating the use of optical amplifiers and advanced modulation formats in optical networks and the Corning Research Centre as a Senior Research Fellow where he led activities in high speed optical component characterization. Currently, he heads the Transmission and Sensors Group at the Tyndall National Institute in Cork, Ireland, where he is also a member of the Department of Physics, University College Cork. He is also an adjunct Professor of Electronic Engineering at Dublin City University, and a founder of the Dublin based start-up Pilot Photonics. His research interests include all optical OFDM, optical and electrical signal processing, the mechanisms limiting capacity in optical communication systems, and the application of photonics to sensing.

Dr. Ellis is a member of the Institute of Physics and the Institute of Engineering Technology, and is a Chartered Physicist. He is an Associate Editor of Optics Express and acts as a reviewer for IEEE Journal of Lightwave Technology, Photonics Technology Letters and Journal of Selected Topics in Quantum Electronics. He has published over 150 journal papers and over 24 patents in the field of Photonics.