



# THE CHINESE UNIVERSITY OF HONG KONG

Jointly Presented Seminar by the  
Center for Advanced Research in Photonics  
IEEE Lasers & Electro-Optics Society (LEOS) Hong Kong Chapter  
and Department of Information Engineering, CUHK

## 40 Gb/s Over 10 Gb/s DWDM Long-haul Optically Amplified Transmission

by

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**Date : 21 Dec., 2005 (Wed.)**  
**Time : 2:30 – 3:30pm**  
**Venue : Rm 833, Ho Sin Hang Engineering Building,**  
**The Chinese University of Hong Kong**

### Abstract

The use of advanced modulation formats has been demonstrated as an effective scheme in managing transmission impairments in long-haul high capacity WDM systems. Several studies have been focused on improving the performance of available advanced modulation formats, while we have also explored some new configurations to reduce the required components for multiple channel WDM signal generation with these formats. The urgent studies of such modulation formats at 40Gb/s bit rate is very critical for upgrading next generation optical networks, especially when they are transmitted over the current RZ - 10 Gb/s DWDM systems.

This presentation will

- (1) Briefly review the schemes for the generation of typical data formats including pulsed multi-channel source generation for return-to-zero (RZ) based WDM application, multi-channel dual-mode based optical pulse source for carrier-suppressed RZ (CSRZ) based WDM application, CSRZ and CSRZ differential phase shift keyed (DPSK) signal generation using Mach-Zehnder modulators and RZ / CSRZ-DPSK generation.
- (2) Demonstrate experimentally the impacts of optical filters (Muxes and Demuxes) of the 10 G DWDM systems over 40 Gb/s channels, especially the filtering characteristics of filter types such as FBGs, thin-film and AWGs.
- (3) Experimentally evaluate the dispersion tolerance of modulation formats in linear and nonlinear operating regime and the effects of 40 Gb/s channels on adjacent 10 G channels and vice versa.

### Biography

Le Nguyen Binh received B.E. (Hons.) and Ph.D. degrees in electronics engineering from the University of Western Australia, Perth, Australia, in 1975 and 1980 respectively. He has worked in both academic and industrial environments, including CSIRO Australia, Siemens Central Research Labs, and the Nortel Networks Advanced Technology Centre. Currently, he is a reader with the Department of Electrical and Computer Systems Engineering, Monash University, Victoria, Australia. His fields of expertise are optical communications systems engineering and linear and nonlinear integrated photonics.

**\*\* ALL ARE WELCOME \*\***

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