



THE CHINESE UNIVERSITY OF HONG KONG  
Department of Information Engineering

*Seminar*

## Optical Priority Queues and Optical Buffer Technology

by

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**Time : 4:00pm - 5:00pm**  
**Venue : Room 833 Ho Sin Hang Engineering Building**  
**The Chinese University of Hong Kong**

### Abstract

One of the main problems in all-optical packet switching is the lack of optical buffers to resolve conflicts among packets competing for the same resources. Traditionally, such conflicts are resolved by first converting optical packets into electronic packets, storing them in electronic random-access memory (RAM), and then converting electronic packets back into optical packets when the resources can be accessed. However, such an optical-electrical-optical (O-E-O) approach incurs serious overheads so that it cannot keep up with the speed of the optical links, and hence, the tremendous bandwidth afforded by the optical links cannot be fully exploited. As the demand for the transmission speed/bandwidth is ever increasing, it has been well recognized that the design of optical buffers has become one of the most critically sought after optical technologies in all-optical packet-switched networks.

In the design of optical buffers, a main problem is proper emulation of optical priority queues using switches and fiber delay lines. Here we introduce some recent advances in this direction. Specifically, we will talk about three related issues: one input and one output priority queue,  $n$  inputs and  $k$  outputs optical priority multiplexer, and  $n$  inputs and  $k$  outputs priority switching node which serves packets according to their priorities and to their destination output ports.

### Biography

Dr. Shaoping Wang received his BSc degree in mathematical education from Nanjing Normal University, China in 1994, MSc degree in applied mathematics and PhD degree in information and signal processing in 2004 and 2009, respectively, both from Southeast University, China. From 2009, he joined the Jinling Institute of Technology, Nanjing, China, where he is now an associate Professor. His primary research interests include: information and coding theory, wireless communications, and network engineering.

At present he is a visiting scholar in the department of information engineering of CUHK.

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