

Monolithic Silicon Photonic Transceivers

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Abstract – Growing bandwidth demand in hyper-scale data centers and high-performance computing motivates the development of faster and more efficient silicon photonics links using solutions such as wavelength division multiplexing and pulse-amplitude modulation (PAM). In this talk, I will provide the latest results on monolithic silicon photonics technology platform including on-chip wavelength multiplexers/demultiplexers and monolithic silicon photonic PAM-4 transmitters. In addition, I will discuss the enabling technologies including combined electrical and optical inline and wafer-scale testing and silicon photonic packaging that can be fully exercised in existing with standard, high-throughput microelectronic packaging facilities. We show low I/O optical loss and progress towards notably improved assembly cost and scalability in both volume and optical port-count.

Bio – Chi Xiong is a Research Staff Member at IBM Thomas J. Watson Research Center. His research focuses on high-speed silicon photonic transmitters and integrated optical sensors. He received the B.S. degree in Microelectronics from Peking University in 2006, and the Ph.D. degree in Electrical Engineering from Yale University in 2012. Before joining IBM in 2013, his research at Yale focused on developing an integrated quantum optics platform based on aluminum nitride. He is a recipient of IBM Outstanding Technical Achievement Award in 2016.