

Optical Computing on Silicon-on-Insulator Based Photonic Integrated Circuits

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Abstract

The advancement of photonic integrated circuits (PICs) brings new opportunities for on-chip optical computation and interconnection. Optical computing, as a promising alternative to traditional CMOS computing, has great potentials to offer ultra-high speed and low-power in information processing and communications. This presentation will discuss some recent research efforts and results on optical computing on silicon-on-insulator based PICs, including optical adder designs and a general logic synthesis framework for PICs. The advantages, limitations, and possible research directions will be discussed.

Bio

David Z. Pan received his PhD degree in Computer Science from UCLA in 2000. He was a Research Staff Member at IBM T. J. Watson Research Center from 2000 to 2003. He is currently Engineering Foundation Professor at the Department of Electrical and Computer Engineering, University of Texas at Austin. He has published over 300 refereed journal/conference papers and 8 US patents and graduated over 20 PhD students. He has served in many premier journal editorial boards and conference committees, including various leadership roles. He has received a number of awards, including the SRC Technical Excellence Award (2013), 14 Best Paper Awards, DAC Top 10 Author Award in Fifth Decade (2013), DAC Prolific Author Award (2013), ASP-DAC Frequently Cited Author Award (2015), Communications of ACM Research Highlights (2014), ACM/SIGDA Outstanding New Faculty Award (2005), NSF CAREER Award (2007), SRC Inventor Recognition Award three times, IBM Faculty Award four times, UT Austin RAISE Faculty Excellence Award (2014), many international CAD contest awards, among others. He is a Fellow of IEEE and SPIE.