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TEXAS A&M UNIVERSITY

S E M I N A R

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Automatic Monitor-Based Tuning of Reconfigurable Silicon Photonic 2nd-Order APF-Based Pole/Zero Filters

by

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Abstract: The innate high bandwidth and low loss properties of integrated photonic filters make them promising candidates to support the ever-expanding data traffic in future wireless and wireline communication systems. Moreover, their high quality factors and multi-GHz tuning ranges can overcome many limitations of conventional electrical filtering solutions. However, integrated photonic components are vulnerable to process and temperature variations, necessitating the challenging task of calibrating and adjusting initial filter responses with accurate resolution. Most existing approaches involve manual tuning by visually monitoring the filter response using a spectrum analyzer, which is time consuming, prone to human errors, and requires expensive lab equipment. In this talk, we demonstrate a monitor-based fully-automatic tuning approach for a 2nd-order all-pass filter (APF)-based pole/zero filter structure. The proposed tuning algorithm allows for fully-automated bandwidth and wavelength tunability, while maintaining the targeted out of band rejection.

Gihoon Choo received the B.Sc. degree in electrical & computer engineering from the Seoul National University, Seoul, South Korea in 2011 and the M.Sc. degree in electrical & computer engineering from the Texas A&M University, College Station, TX, USA in 2013. He is currently working toward the Ph.D. degree in electrical and computer engineering at Texas A&M University, College Station, TX, USA. He joined the Analog and Mixed Signal Center, Texas A&M University in August 2013, and working as a Research Assistant. His research interest is developing RF Integrated Silicon Photonic Receivers including integrated silicon photonic filter, integrated silicon photonic phased array, and linear optical modulator.