



Multi-Carrier ADC/DAC-Based Wireline Transceiver Architectures

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ABSTRACT

Demand for increased data-rates in serial link transceivers calls for innovative architectures capable of overcoming impairments such as limited channel bandwidth and stringent jitter specifications. This talk will provide an overview of recent advances in a jitter-robust ADC/DAC-based multi-carrier transceiver architecture. Details of a 40Gb/s receiver that supports multi-carrier signaling with three 4GS/s bands with baseband four-level pulse amplitude modulation (PAM4) and mid-band and high-band 16-state quadrature amplitude modulation (QAM16) on 4GHz and 8GHz orthogonal carriers will be presented. This is followed by discussion on a multi-carrier DAC-based transmitter that utilizes parallel baseband and polar mid-band and high-band output drivers and employs efficient digital FIR filtering and linearization techniques.

BIO

Samuel Palermo (S'98-M'07) received the B.S. and M.S. degree in electrical engineering from Texas A&M University, College Station, TX in 1997 and 1999, respectively, and the Ph.D. degree in electrical engineering from Stanford University, Stanford, CA in 2007.

From 1999 to 2000, he was with Texas Instruments, Dallas, TX, where he worked on the design of mixed-signal integrated circuits for high-speed serial data communication. From 2006 to 2008, he was with Intel Corporation, Hillsboro, OR, where he worked on high-speed optical and electrical I/O architectures. In 2009, he joined the Electrical and Computer Engineering Department of Texas A&M University where he is currently a professor. His research interests include high-speed electrical and optical interconnect architectures, RF photonics, high performance clocking circuits, and radiation-hardened circuit design.

Dr. Palermo is a recipient of a 2013 NSF-CAREER award. He is a member of Eta Kappa Nu and IEEE. He is currently an associate editor for IEEE Solid-State Circuits Letters and has previously served as an associate editor for IEEE Transactions on Circuits and System – II. He has also previously served as a distinguished lecturer for the IEEE Solid-State Circuits Society and on the IEEE CASS Board of Governors. He was a coauthor of the Jack Raper Award for Outstanding Technology-Directions Paper at the 2009 International Solid-State Circuits Conference, the Best Student Paper at the 2014 Midwest Symposium on Circuits and Systems, and an Outstanding Student Paper Award at the 2018 Custom Integrated Circuits Conference. He received the Texas A&M University Department of Electrical and Computer Engineering Outstanding Professor Award in 2014 and the Engineering Faculty Fellow Award in 2015.