USC Viterbi School of Engineering
Ming Hsieh Department of Electrical Engineering

Integrated Systems Seminar Series

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Frequency Agile Circuits Based on Thin Film Ferroelectrics

Prof. Amir Mortazawi
University of Michigan.

Friday September 20, 3:30 – 5:00 PM, EEB 248

My talk is on the design of frequency agile circuits based on thin film ferroelectrics. Central to this work is the use of thin film barium strontium titanate (BST), a low loss, high dielectric constant field dependent material. The electric field dependence of BST is used to design tunable RF and microwave devices and components. Other applications such as linearization of power amplifiers will also be discussed. Another important characteristic of BST is its dc electric field induced piezoelectric and electrostrictive effects. These properties can be utilized to design intrinsically switchable film bulk acoustic wave resonators (FBARs) and FBAR filters. Ferroelectric based filter banks can make it possible to reduce size and power consumption of conventional filter banks employed in multi-standard and frequency agile radios. Recent results for intrinsically switchable BST bulk acoustic wave resonators and filters will be presented.

Amir Mortazawi received the Ph.D. degree in electrical engineering from The University of Texas at Austin, in 1990.
He is a currently a Professor of electrical engineering with The University of Michigan at Ann Arbor. His research interests include millimeter-wave circuits, phased arrays, power amplifiers, ferroelectric thin film based devices and frequency-agile microwave circuits.

Mortazawi was the Editor-in-Chief of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES from 2006-2010. He is a member of the IEEE Microwave Theory and Techniques Society (IEEE MTT-S) Administrative Committee (AdCom). He also served as Associate Editor for the IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION (1998–2001), IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES (2005). Mortazawi is a Fellow of IEEE.