



## RF MEMS for Commercial and Defense Applications

IEEE-MTT Chapter Presentation

Professor: Gabriel M. Rebeiz  
The University of California, San Diego

**Abstract:** The development of RF MEMS switches has accelerated considerably over the past several years, and currently there are several switches which have been tested to 100 billion cycles with no failures. However, it is still hard to package these devices and fundamental questions regarding the need of a hermetic package and the failure modes of RF MEMS switches under high power conditions are not well understood. The talk will present the latest work in high isolation switch networks, phase shifters and tunable filters. It will also present detailed modeling on the intermodulation distortion of MEMS devices and how they are 60-90 dB better than GaAs devices. The talk will conclude with the latest research areas in RF MEMS switches, varactors and tunable networks for commercial and defense applications.

**Biography:** Gabriel M. Rebeiz (Fellow, IEEE) earned his Ph.D. degree in electrical engineering from the California Institute of Technology, Pasadena, in 1988. In September 1988, he joined the University of Michigan's Department of Electrical Engineering and Computer Science at the University of Michigan, Ann Arbor and was promoted to a full Professor in 1998. He is currently a Professor of Electrical Engineering and Computer Science at the University of California, San Diego.

He was the recipient of the 1991 National Science Foundation Presidential Young Investigator Award, and the 1993 URSI Isaac Koga Gold Medal Award for outstanding international research. The IEEE gave Rebeiz its IEEE Microwave Prize in 2000 and its Outstanding Young Engineer Award in 2003. A Fellow of the IEEE and a consultant to Intel, Agilent, Hitachi, and Samsung, Rebeiz has published extensively in the fields of microwave technology, planar antennas, and RF MEMS. He has given more than 20 distinguished and plenary invited presentations in the past 10 years. His book, RF MEMS: Theory, Design, and Technology, John Wiley & Sons Inc., 2003, has received wide acclaim. Rebeiz has won a variety of teaching awards at the University of Michigan, including the university's Amoco Award for Excellence in Teaching in 1998, and the Eta Kappa Nu 1998 Professor of the Year Award.

He has held short visiting professorships at Chalmers Univ. of Technology, Gothenburg, Sweden, Ecole Normale Supérieure, Paris, France, and Tohoku University, Sendai, Japan. His research interests include applying micro-electro-mechanical systems (MEMS) for the development of novel components and sub-systems for radars and communication systems. He is also interested in SiGe RFIC design for receiver applications, and in the development of planar antennas and microwave/millimeter-wave front-end electronics for communication systems, automotive collision-avoidance sensors, and X- to W-band phased arrays.

**Date: January 4<sup>th</sup>, 2006**

**Time: 4:00 pm**

**Location: DC 1302**

**Invited by Prof. Raafat R. Mansour**

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