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**ELECTRICAL & COMPUTER
ENGINEERING**
TEXAS A & M UNIVERSITY

SEMINAR

Room 1003 ETB

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Time-Domain Dielectric Spectroscopy Using a Miniaturized Contact-Based UWB System

by

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Abstract: Dielectric spectroscopy is a versatile technique for identifying materials based on their electrical properties. This method measures complex relative permittivity of materials, as a function of frequency. Specification of the complex relative permittivity in a wide frequency range, enhances accuracy in detection and comparison of materials. Therefore, microwave broadband dielectric spectroscopy has been widely used in medical, biological, and agricultural applications. With time-domain dielectric spectroscopy (TDS) technique, a complete characterization of material under test is rapidly obtained by using a short duration pulse that simultaneously contains all the desired frequencies in microwave frequency range. While TDS method requires a wideband high speed oscilloscope for acquisition of the short duration pulse, it enables sufficiently accurate measurements by immediate data averaging in each measurement. In this seminar, a 3–10 GHz contact-based broadband dielectric spectroscopy system implemented in time-domain is presented.

Reza Ebrahimi Ghiri received his B.Sc. degree from Shiraz University, Shiraz, Iran, in 2010 and M.Sc. degree from Amirkabir University of Technology, Tehran, Iran, in 2013, both in electrical engineering. He is currently working toward the PhD degree under supervision of Professor Kamran Entesari in electrical engineering at Texas A&M University, College Station, TX, USA. His research interests include RF, microwave, and millimeter circuits and systems for wireless communications and sensing.