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

## SEMINAR

Room 1020 ETB

September 20, 2019, 1:50 – 2:50 P.M.

### **A 0.5-to-3.5 GHz Self-Interference-Canceling Receiver for In-Band Full-Duplex Wireless**

by

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**Abstract:** This paper proposes an in-band full-duplex self-interference canceling receiver that achieves transmitter leakage cancellation by scaling the in-phase and quadrature components of TX replica, and injecting the approximated leakage to the RX interface. More than 35 dB cancellation is measured for modulated TX samples. The receiver structure is 8-phase passive-mixer-first with high linearity and on-chip sharp rejection of out-of-band blockers. The receiver has an IB-IIP3 of 6 dBm at 1 MHz offset from 2 GHz carrier, and OB-IIP3 of 27 dBm. The NF at 5 MHz baseband frequency is 3.3 dB at TDD mode. At FD mode, i.e., RX and TX are operating simultaneously at the same frequency band, only 2-2.5 dB noise degradation is observed. The NF reaches 5.3 dB in FD mode. As a proof of concept prototype is fabricated and measured in 65 nm CMOS. The system is functional from 500 MHz to 3.5 GHz.

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**Ali Ershadi** received the B.S. and M.S. degrees in electrical engineering from Sharif University of Technology. He is currently a Ph.D. student at Texas A&M University.