

## SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING  
Faculty of Engineering  
Website: <https://www.eng.nus.edu.sg/ece/>

**Area: Integrated Circuits & Embedded Systems**

**Host: Assoc Prof Massimo Alioto**

<b>TOPIC</b>	:	<b>STAR – Simultaneous Transmit and Receive RF integrated circuit</b>
<b>SPEAKER</b>	:	<b>Professor Sayfe Kiaei Arizona State University</b>
<b>DATE</b>	:	<b>22 January 2020, Wednesday</b>
<b>TIME</b>	:	<b>12pm to 1pm</b>
<b>VENUE</b>	:	<b>E3-06-09, Engineering Block E3, Faculty of Engineering, NUS</b>

### ABSTRACT

Full Duplex (FD) or simultaneous transmit and receiver STAR transceiver has been gaining significant attention lately as they double the spectral signal capacity by allowing the down-link and up-link channels to operate at the same time and occupy the same frequency band. The FD system has many applications for cellular system, satellite communication, RADAR system, and other applications. This technique can be employed for reducing the adjacent channel interference, distributed energy-efficient multiple-input multiple-output (MIMO) systems, beam-forming, MIMO relay, and military applications. The main challenge in the FD system is to reduce the transmit signal leakage (or echo) from the transmitter to the receiver where the transmit signal power leakage can be significantly higher than the received by 50-80 dB and can saturate the front-end LNA and mixer. Furthermore, the PA noise can increase the receiver overall noise-floor. The FD system requires self-interference cancelation (SIC) by over 100 dB. This presentation will give an overview of the FD system, and it will discuss various different methods for canceling the interference from the antenna, RF, analog front-end, and the digital baseband.

### BIOGRAPHY



Dr. Kiaei has been with ASU since January 2001. He is a professor and Motorola Endowed professor and chair in analog and RF integrated circuits. He is the director of the USAID-funded U.S.A & Pakistan Centers for Advanced Studies in Energy program (USPCAS-E (<https://uspcase.asu.edu/>)). He is also the director of NSF Connection One research center with a focus on integrated communication system. Dr. Kiaei was the associate dean of research at the Ira A. Fulton Schools of Engineering from 2009 to 2102. From 1993 to 2001, he was a senior member of technical staff with the Wireless Technology Center and Broadband Operations at Motorola where he was responsible for the development of RF and transceiver integrated circuits. Dr Kiaei was an associate professor at Oregon State University from 1987 to 1993 and he was the co-director of the industry-university center for the Design of Analog/Digital ICs (CDADIC).

He has published over 150 journal and conference papers and holds several patents. He has graduated over 100 MS and PhD students. His academic and research interests are in wireless system, RF, and analog/digital Mixed-Signal integrated circuits. His research projects are funded by a large number of industrial sponsors and federal funding agencies. Dr. Kiaei is an IEEE Fellow, and has been the chair and on the technical program committee of several IEEE conferences including RFIC, MTT, ISCAS and other international conferences.