

## **Fracking for 5G: Reconfigurable RF and High-Efficiency Millimeter-wave Circuit Techniques for Better Spectrum Usage**

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### **Abstract:**

Mobile data demands are rapidly growing beyond the capabilities of licensed RF bands. To reach gigabit-per-second speeds, the cellular industry is considering a significant jump from RF to millimeter-wave bands over the next decade to alleviate congestion at RF bands. To take the most advantage of the current RF spectrum, software-defined radios are needed to hop to available spectrum. This talk will present our investigations into enabling CMOS circuits based on reconfigurable  $N$ -path filters for interference mitigation. At mm-wave bands, our ongoing work has demonstrated record output power from CMOS SOI millimeter-wave PAs and this talk will discuss system demands on transmit schemes, specifically outphasing, for high power and peak efficiency.

### **Bio:**

James (Jim) Buckwalter received the Ph.D. degree in Electrical Engineering from the California Institute of Technology (Caltech), Pasadena, in 2006. He is currently a Professor of Electrical and Computer Engineering at the University of California – Santa Barbara (UCSB). He joined the faculty at the University of California – San Diego (UCSD), La Jolla, CA as an Assistant Professor in 2006 and was promoted to Associate Professor of Electrical and Computer Engineering in 2012. He is the recipient of an IBM Ph.D. Fellowship, Defense Advanced Research Projects Agency (DARPA) Young Faculty Award, NSF CAREER Award, and IEEE Microwave Theory and Techniques Society (MTT-S) Young Engineer Award.

