Abstract: We present the state of the art of millimeter wave single-chip CMOS digital radio and phased array solutions, embedded in standard plastic package. The convergence of millimeter wave CMOS digital radio, phased array technology, low power cognitive mixed-signal processing and embedded phased array antenna will be discussed. This represents a unique opportunity to develop low power millimeter wave multi-gigabit radio for communication and sensing, at a similar cost structure as a Bluetooth radio. These solutions offer the lowest energy per bit transmitted wirelessly at multi-gigabit rate and meet very stringent low-power specifications for a variety of applications including: portable consumer electronic devices, secure mmW body area networks, and digital radar. This talk will focus on some of our key technology breakthroughs as related to portable beamforming and collaborative signal processing.

Biography: Dr. Joy Laskar received his B.S. degree (Computer Engineering with Math/Physics Minors, summa cum laude) from Clemson University and his M.S. and Ph.D. degrees in Electrical Engineering from the University of Illinois at Urbana-Champaign. Prior to joining Georgia Tech in 1995, Dr. Laskar was a visiting professor at the University of Illinois at Urbana-Champaign and an assistant professor at the University of Hawaii at Manoa. At Georgia Tech he holds the Schlumberger Chair in Microelectronics in the School of Electrical and Computer Engineering. He is also Founder and Director of the Georgia Electronic Design Center, and has graduated 41 Ph.D. students since 1995. He has authored or co-authored more than 500 papers, several book chapters and three books (with another book in development). He has given numerous invited talks, and he has more than 50 patents issued or pending. Dr. Laskar and his research team have founded four companies to date: an advanced WLAN IC Company: RF Solutions, which is now part of Anadigics (NASDAQ: Anad), a next-generation analog CMOS IC Company, Quellan, which is developing collaborative signal-processing solutions for the enterprise, video, storage and wireless markets, which is now part of Intersil (NASDAQ: ISIL) and two more companies which are part of Georgia Tech's Venture lab process. Dr. Laskar was elected IEEE Fellow in 2005 and served as General Chairman of the IEEE International Microwave Symposium 2008. He currently serves as an elected member of the IEEE MTT-S Administrative Committee, Chair of the IEEE MTT-S Education Committee, and Chair of the IEEE MTT-S Executive Committee.