Abstract:
Bistatic (and multistatic) radars have been around for more than 70 years. There has been resurgence of interest in the subject a number of times in the past. Much is known, at least theoretically, about multistatic radars. Several experimental systems have been built but only few are operational. It is an emerging area. However the near future appears to hold promise of construction of operational systems. Borrowing from communications theory, there has been recent (and huge) interest in MIMO configurations applied to multistatic radar systems. This talk will provide a brief introduction to multistatic radars and some of the issues affecting their capabilities and performance. The importance of the ambiguity function in design of transmitter waveforms and configuring of system topology will be delineated. Optimal detection procedures and derivations of ambiguity functions with regard to spatial coherence of the radar system will be briefly described. Some remarks on (centralized and decentralized) detection of targets in multistatic radar systems will also be made. A few research issues that could be investigated in the area of multistatic and MIMO radar processing and detection will be suggested. The talk will conclude with presentation of some recent and interesting examples and applications of multistatic radars that have been developed in various countries. The subject is vast and complex; applications such as Synthetic Aperture Radar and comparisons with the practically important conventional phased-array radar systems will not be discussed.

Brief Bio of the Speaker:

Rajan Srinivasan received the Bachelor and Master of Technology degrees from the Indian Institute of Technology, Delhi and a Ph.D from the University of Aston in Birmingham, England. His principal interests are in communications and statistical signal processing; recent attention has focussed on applications of rare event theory and fast stochastic simulation in these areas. He has authored several papers in international journals and conferences, and has written Importance Sampling - Applications in Communications and Detection, the rst monograph on this subject in the world, published by Springer-Verlag in 2002. Amongst various positions he has held, Srinivasan has been a senior research scientist working for the Ministry of Defence of the Government of India, a visiting professor at Syracuse University, NY, USA, and has also spent several years at the University of Twente in the Netherlands. In 1984 he received a Young Scientist award from the URSI (International Union of Radio Science) in Florence, Italy, for his work on distributed detection which resulted in seminal publications. He is a Life Fellow of the IETE, Fellow of the IEE, Fellow of the IEEE. Till recently he was a visiting professor at National Sun Yat-sen University in Taiwan, working in the area of wireless communications. During 2009 - 2010 he was a visiting professor at the Indian Institute of Science (IISc) in Bangalore. He is presently a Distinguished Scientist (and professor) at the CR Rao AIM- SCS (Advanced Institute of Mathematics Statistics and Computer Science in Hyderabad, India), working in the area of MIMO radar.