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Phased Array Radar Antenna
Design Considerations

By

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Abstract:

Phased array antennas are in widespread use for radar systems and other applications. This presentation will briefly review the fundamentals of radar operation and present some example radar systems. The presentation will then highlight some of the fundamental design trades involved in applying phased arrays to radar systems. Topics will include element and array design, architecture trades, beamformer options, active element impedance, excitation error budgets and their effect on array pattern performance, power handling and power distribution.

Biography:

Donald McPherson is currently manager of RF Design at SRC, Inc. in Syracuse, NY. He has more than 25 years experience in RF, microwave and antenna engineering from 400 MHz to 94 GHz. He has been a contributor to several phased array radars including an S-Band multi mission radar, an L-Band counter mortar radar and a UHF foliage penetration radar. He further led the design of an X-Band multi-beam phased array and implemented calibration of a 94 GHz active phased array. Prior to joining SRC, Mr. McPherson was a Sr. Microwave Engineer at the Lockheed Martin (General Electric) Electronics Laboratory. He was engaged in phased array antennas at 20, 44, 60 and 94 GHz. He contributed to T/R module developments at C-Band and L-band for ground and space applications. In addition, he designed MMIC amplifiers at X and Ku-band. He was previously employed at Anaren Microwave as a Co-op Engineer. Mr. McPherson received an AAS from SUNY Alfred in 1980, a BSEE from Rochester Institute of Technology in 1984 and an MSEE from Syracuse University in 1989. He is a member of the IEEE and served as the Syracuse MTT/AP Chapter Chairman from 1985-1986. He is a registered Professional Engineer in New York State.