

Tutorial 1

Title: Principles of radar antennas, propagation and scattering

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Abstract:

This tutorial provides a broad introduction to rf aspects of radar on the “free-space” side of a radar system. Basic general antenna concepts are introduced and illustrated by reference to typically-used radar antennas, including wire, reflector and phased array antennas. Principles of aperture illumination functions for pattern control and beam steering are addressed. Propagation through earth’s atmosphere, allowing for tropospheric and ionospheric effects, is described and the elements of radar scattering are treated. The target audience for this tutorial includes radar designers, researchers and users whose specialisation is in fields other than electromagnetics and antennas and who seek a broad descriptive understanding of these areas.

Biographical details of presenter:

Professor Don Sinnott is a radar systems consultant and Adjunct Professor of Radar Systems at the University of Adelaide, Australia. He was with Australia’s Defence Science and Technology Organisation for over 30 years, involved in research and executive management with emphasis on radio and radar electromagnetics, radio navigation and sensor integration. Subsequently he was Chief Executive Officer of a research centre managing research activity in signal processing in five major Australian universities. He holds a PhD from Syracuse University, USA, a BE and MEngSc from Melbourne University, Australia, is a Fellow of the Institution of Engineers Australia and is a Life Fellow of IEEE. He was general Chair for Radar 2003 in Australia and continues to serve on the organising committees of other radar conferences, including Radar 2013 to be held in Australia.

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