



Surveillance Radar Systems

Prof. Simon Watts
Thales, UK

Conference Centre
Technology Park Adelaide
Mawson Lakes SA

How to register

Please fill out the registration form overleaf if you wish to register for 1 or 2 courses and/or a field trip to the HFSW Radar site.

Presenter:

Professor Simon Watts

MBE, MA, MSc, PhD, CEng, FREng, FIEE, FIEEE
Thales UK



Simon Watts graduated from the University of Oxford in 1971 and obtained an MSc from the University of Birmingham in 1972.

He is currently Deputy Scientific Director of Thales UK, Aerospace Division, and is also a Visiting Professor in the Department of Electronic and Electrical Engineering at University College London. He joined Thales (then EMI Electronics) in 1967 and since then has worked on a wide range of radar and EW projects, particularly airborne maritime surveillance radars and synthetic aperture radar. His research interests include the modelling of radar sea clutter and the development of signal processing techniques for radar target detection.

He has co-authored a book (K.D.Ward, R.J.A.Tough and S.Watts, "Sea clutter: Scattering, the K Distribution and Radar Performance", IET, 2006) and is author and co-author of over 35 journal and conference papers, and several patents. He also lectures regularly on radar topics and was chairman of the international radar conference RADAR-97. He was appointed MBE in 1996 for services to the UK defence industry and is a Chartered Engineer, Fellow of the Royal Academy of Engineering, Fellow of the IEE and Fellow of the IEEE.

Course Fees

- AU\$ 1122 (register by 1 May 2008)
- AU\$ 1320 (register by 25 Aug 2008)

20% discount will be given if registered for 2 courses during Radar Week

Student scholarships available, please enquire.

About

Surveillance Radar Systems

This two-day course provides an introduction to the radar system concepts encountered in the design and development of surveillance radar systems, with particular emphasis on airborne radars. Each module will provide a basic introduction to the subject area and then cover various topics at a more advanced level.

Target Audience

The course will be suitable for engineers and scientists involved in the design, modelling and assessment of surveillance radar systems, including engineers involved in the procurement of radar systems. A basic knowledge of radar system theory will be helpful.

Course Outline

Radar fundamentals: a brief introduction to radar system basics, including the radar equation; targets and clutter; thermal noise; propagation; pulse compression; detection processing and track-while-scan systems.

Radar clutter: basic clutter characteristics (reflectivity, polarimetry, amplitude statistics, Doppler spectrum, spatial correlation); clutter models (land, sea and rain clutter); sea clutter and the compound K distribution.

Constant false alarm rate (CFAR) detection systems: cell-averaging CFAR systems and variants; analysis of CFAR detection in noise and clutter; distribution free and adaptive CFAR systems.

Moving target indication (MTI) and moving target detection (MTD): Doppler spectrum of pulsed radar returns; MTI cancellers; pulse Doppler processing; airborne pulse Doppler; waveform design (low, medium and high pulse repetition frequency waveforms); displaced phase centre antennas (DPCA) and space-time adaptive processing (STAP).

Electronic countermeasures (ECM) and electronic protection measures (EPM): jammer strategies; passive ECM techniques; active ECM techniques; EPM techniques (parameter agility, sidelobe blankers and cancellers etc.).

Synthetic aperture radar (SAR): imaging with radar; SAR fundamentals (swath SAR, spot SAR and Inverse SAR); platform motion compensation and autofocus; SAR signal processing; interferometric SAR.

Specification and measurement of radar performance: performance specification issues (procurement of adaptive radars etc.); performance prediction; measuring performance; measurement methods and accuracies.

Overview of in-service surveillance radar systems: illustrations of radar systems employing the topics covered in the lectures; maritime surveillance; airborne early warning; battlefield surveillance (land-based and airborne radar); weapon location; UAV radars.

Registration Form and Tax Invoice* ABN 62 102 206 173

*Upon completion of this form, including the relevant payment, this form will become a Tax Invoice.

Please register me for Surveillance Radar Systems on 8-9 September 2008.

PLEASE PRINT

Date: _____

Title: _____ First Name: _____ Surname: _____

Position: _____ Organisation/Division: _____

Postal Address: _____

Telephone No: _____ Facsimile No: _____ Email: _____

Dietary preference: _____

Course Fees: Early bird fee: AU\$1122 (incl. GST) (Register before **May 1st, 2008.**) Full fee: AU\$1320 (incl. GST) (Register before **Aug 25th, 2008.**)

Please also register me for:

One of the following Radar Week courses on 10-11 September 2008:

- Tracking and Data Fusion
- Breakthroughs and New Concepts in Radar: from Bistatic to MIMO Configurations

Total fees for 2 courses: (with 20% discount) AU\$1795 (incl. GST) (Before **May 1st, 2008.**) AU\$2112 (incl. GST) (Before **Aug 25th, 2008.**)

- Radar Week Dinner (7:30pm, 9 September 2008).** Cost: AU\$ 120 (incl. GST)
- Field trip to the HFSW Radar site (12 September 2008).** Cost AU\$ 220 (incl. GST)

Total Amount: AU\$ _____

Method of Payment (please tick below):

- Cheque (payable to National ICT Australia Ltd)
Forward the cheque and a copy of THIS registration form to:
Anne-Marie Eliseo, Industry Education Manager, NICTA, SPRI Bld, Mawson Lakes Boulevard, Mawson Lakes SA 5095, Australia.

Credit Card: Credit Card No.: _____ Expiry Date: _____
 Visa Master Card Name on card: _____
Amount: AU\$ _____ Signature: _____ Tick if receipt required
Email address of card holder: _____

Electronic Funds Transfer
Please advise by email to Annette Van Bramer
annette.vanbramer@nicta.com.au
when payment is made

BANK	Commonwealth Bank of Australia
ACCOUNT NAME	National ICT Australia Limited
BSB	062 900
ACCOUNT NUMBER	1032 4576
REFERENCE NUMBER	RW0908

FAX the form to +61 - 8 - 8302 3115 or EMAIL it to industryeducation@nicta.com.au

Enquiries: Anne-Marie Eliseo, Industry Education Manager, ph: +61 8 8302 3928, email: industryeducation@nicta.com.au.

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