



The Knowledge Network

The Institution of *Engineering and Technology*

# Waveform Diversity & Digital Radar Conference 2008

**8 – 9 DECEMBER 2008**

The IET, Savoy Place, London, UK

## KEY BENEFITS

- Attend one or both days to learn about emerging trends in waveform diversity and design and active phased array radar design
- Hear from key industry figures about how these trends will influence the capability and design of future radar systems and beyond
- Network and share your experiences with fellow professionals and discuss future opportunities and challenges

## HEAR FROM KEY COMPANIES INCLUDING:

- Ministry of Defence
- Ofcom
- QinetiQ
- Swedish Defence Research Agency
- Thales

Supporter:



Register at [www.theiet.org/waveform](http://www.theiet.org/waveform)

## INTRODUCTION

Combining forces from two hugely successful events, Waveform Diversity & Digital Radar 2008 brings together leading industry representatives and academics to explore the current challenges and recent developments within these areas, while promoting cross-fertilisation of knowledge across traditional boundaries.

Day one will focus on Waveform Diversity & Design, addressing the latest research and developments in this field. Hear from keynote speaker Professor William Webb about the importance of spectral efficiency and Ofcom's current initiatives surrounding this, as well as the latest advances from Thales, QinetiQ, Royal Navy and Cranfield University.

Day two will cover From Active Modules Towards Digital Radar, examining recent developments in active antennas, radar architectures and digital processing techniques. Learn about the work being carried out in this challenging area by key figures including the Ministry of Defence, Thales, QinetiQ, Roke Manor Research and ONERA.

Delegates are invited to register for one or both days online or via the registration form on the back of this brochure.

## SPONSORSHIP AND EXHIBITION OPPORTUNITIES

There are a number of sponsorship opportunities associated with this event, to find out more about the packages available, please contact our Sponsorship Executive, Ahmed Ahmed at [aahmed@theiet.org](mailto:aahmed@theiet.org) or +44 (0) 1438 765 591

### CONDITIONS OF BOOKING

Form to be received no later than Monday, 1 December 2008. All participants registering less than two weeks before the date of the event are advised to bring a copy of their registration form with them.

### CANCELLATION

In the event of cancellation and provided that written notice is received seven days prior to the event, a refund of 50% of the total fee will be made. If no notice of cancellation is received, no refund can be made. The Institution of Engineering and Technology reserves the right to cancel any event. In this case, the full fee will be refunded unless a mutually convenient transfer can be arranged. Details of event changes or cancellations are available by phoning +44 (0)1438 765 650.

## CONFERENCE CHAIRS

**Dr Stephen Harman** currently leads and manages an applied radar systems group at QinetiQ, specialising on exploitation of processing techniques. He has over 16 years experience in research, design, build and test of solid state radar systems and has particular expertise in waveform design and analysis.

**Julia Tagg** has worked for the UK Ministry of Defence (MoD) for the past 12 years where she has been working on programmes to develop multi-function radar demonstrators. For the past 6 years Julia has worked as the MoD technical advisor for ARTIST (Advanced Radar Technology Integrated System Testbed), a collaborative UK/US digital array radar demonstrator.

Organised by The Institution of **Engineering and Technology** Radar, Sonar and Navigation Technical and Professional Network. To find out more about the networks and how they can benefit your career please visit the website: [www.theiet.org/communities](http://www.theiet.org/communities)

### NAME SUBSTITUTIONS

Name Substitutions are accepted at any time by fax: +44 (0)1438 765659 or email: [events1@theiet.org](mailto:events1@theiet.org)

### SUPPORTING ORGANISATIONS

Members of supporting organisations who can provide evidence of their affiliation will be admitted at members' rates.

### DELEGATES WITH SPECIAL NEEDS

The Institution of Engineering and Technology aims to offer fully accessible events to all its delegates. Please help us to accommodate any individual needs that you may have by attaching a note to the registration form. We will contact you to discuss this as necessary.

## EVENT PROGRAMME

MONDAY 8 DECEMBER

### Waveform Diversity & Design

- 08.30 Registration and Morning Refreshments**
- 09.00 Chairman's Welcome and Opening Remarks**  
Stephen A Harman, *QinetiQ*, UK
- 09.15 Opening Keynote Address: Spectral Efficiency: A Parameter of Increasing Importance to Radar Systems**  
- Enabling sharing and re-use between radar and commercial communications  
- Shaping future system design - reviewing Ofcom's current policies, initiatives and programmes for spectral efficiency  
Professor William Webb, *Head of Research and Development, Ofcom*, UK
- 10.00 Correlation of Target Transfer Functions and Range Profiles as a Function of Aspect Angle and Resolution**  
J.W. Hyde, *Royal Navy*, UK  
C.M. Alabaster, *Cranfield University*, UK
- 10.30 Non-Circular Waveforms for Radar Applications**  
F. Barbaresco, *Thales Air Systems*, France  
P. Chevalier, *Thales Communications*, France
- 11.00 Morning Refreshment Break**
- 11.30 High Duty Waveform Design for Active Array Airborne Surveillance Radar**  
Stephen A Harman, *QinetiQ*, UK
- 12.00 MMSE Based Waveform Design**  
T. Naghibi, F. Behnia, *Advanced Communications Research Institute, Department of Electrical Engineering, Sharif University of Technology*, Iran
- 12.30 The Detection Range Improvement of Two Channels FMCW Radar**  
Liang Bo, Wu Yong, *Northwestern Polytechnical University*, China
- 13.00 Lunch**
- 14.00 A New Method for Detection of Distributed Targets Based on Eigenvector Decomposition in Imaging Radars**  
B.Z. Gatabi, *Islamic Azad University*, Iran  
A. Ghorbani, *Amirkabir, University of Technology*, Iran
- 14.30 Adapting Electronic Warfare to Radar Waveforms**  
Lars Falk, *Swedish Defence Research Agency (FOI)*, Sweden
- 15.00 Afternoon Refreshment Break**
- 15.30 Waveform Diversity and Design: Part I – Issues for Multi-Antenna Systems**  
Andrew M.Guidi, Taj A. Sturman, Peter Dingley, Mark D.J. Bowyer, Neil R. Petfield, Martin Moseley, *Astrium*, UK
- Waveform Diversity and Design: Part II – Issues for Services and Applications**  
Taj A. Sturman, Andrew M.Guidi, Peter Dingley, Mark D.J. Bowyer, Neil R. Petfield, Martin Moseley, *Astrium*, UK  
Godred Fairhurst, *University Of Aberdeen*, UK
- 16.10 Channel Estimation Error Compensation in OFDM Based Multi-Carrier Systems**  
Günes Karabulut-Kurt, Coskun Sahin, *Turkcell Sletisim Hizmetleri A.S*, Turkey
- 16.40 Chairman's Closing Remarks**
- 17.00 Close of Day One and Waveform Diversity & Design Conference**

TUESDAY 9 DECEMBER

### From Active Modules to Digital Radar

- 08.30 Registration and Morning Refreshments**
- 09.15 Chairman's Welcome and Opening Remarks**  
Julia Tagg, *Defence Science and Technology Laboratory*, UK
- 09.30 ATOLS: An Example of Digital Radar**  
Philippe Lacomme, *Thales Airborne Systems*, France
- 10.00 The ARTIST Digital Radar Programme**  
Julia Tagg, *Defence Science and Technology Laboratory*  
Salvador Talisa, *John Hopkins University/Applied Physics Laboratory*, UK
- 10.30 Morning Refreshment Break**
- 11.00 From AESA Radar to Digital Radar for Surface Applications**  
Odile Adrian, *Thales Air Systems*, France  
Eric Chamouard, Stéphane Kemkemian, *Thales Airborne Systems*, France
- 11.30 UK Airborne AESA Designs, Trends & Future Challenges**  
Stephen Moore, *Defence Science and Technology Laboratory*, UK
- 12.00 Fully Integrated, Highly Precise, Low-Cost Phase Shifters for Commercial Maritime Phased Arrays**  
H. Erkens, R. Wunderlich, S. Heinen  
*Chair of Integrated Analog Circuits, RWTH Aachen University*, Germany
- 12.30 Lunch**
- 13.45 Wideband Direct RF Digitisation Using High Order Nyquist Sampling**  
Chris Peacock, William Dawber, *QinetiQ*, UK
- 14.15 Advances in Affordable Digital Array Radar (DAR)**  
Chris Tarran, *Roke Manor Research*, UK
- 14.45 Afternoon Refreshment Break**
- 15.15 Relative Merits of Pre-Doppler and Post-Doppler STAP for Airborne Radars**  
P G Richardson, J C Medley, *QinetiQ*, UK  
W Bürger, *FGAN*, Germany  
L Savy, *ONERA*, France
- 15.45 On the Benefits of Space-Time Adaptive Processing in FM Ranging Airborne Radar**  
P G Richardson, G M Herbert, *QinetiQ*, UK
- 16.15 Chairman's Closing Remarks**
- 16.30 Close of From Active Modules to Digital Radar Conference**

Register before  
27 October 2008 to  
receive a discount on  
your delegate fee.



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# Waveform Diversity & Digital Radar Conference 2008

8 - 9, DECEMBER 2008

The IET, Savoy Place, London, WC2R 0BL, UK

## 5 Easy Ways to Register

- 1 Online:**  
www.theiet.org/waveform
- 2 Fax:**  
+44 (0)1438 765 659
- 3 Phone:**  
+44 (0) 1438 767 343
- 4 Email:**  
eventscs1@theiet.org
- 5 Post:** Finance Dept,  
The Institution of  
Engineering and Technology,  
PO Box 96, Stevenage,  
Herts SG1 2SD, UK

## REGISTRATION FORM

### DATA PROTECTION

The information that you provide to the IET will be used to ensure we provide you with products and services that best meet your needs. This may include the promotion of specific IET products and services by post and/or electronic means. By providing us with your email address and/or mobile telephone number you agree that we may contact you by electronic means. You can change this preference at any time by visiting [www.theiet.org/my](http://www.theiet.org/my)  
If you consent to your details being passed on to the event sponsor(s) please tick here

### Delegate Details (for ease, attach your business card) – Please photocopy form for multiple bookings

(Mr/Mrs/Ms/Miss/Dr) Family Name  First name   
 Business E-mail  Tel   
 Fax  Job Title

### Company Details

Name of Company

Department  Address

City  Postcode  Country

Nature of Company/ Business

Institution Membership Number (if applicable)  Dietary or other requirements

Member? Yes  No  I heard about this event by: Flyer in post  Email  Advert (Institution Publication)  Advert (other)  The IET Website  Other

### PRICES AND PAYMENT INFORMATION

#### Single Day Rates

Early Bird Charges per person (on or before Monday, 27 October 2008)	£	P
<b>1 Day Rate 08 December</b>		
Member	£245.00 (+ £42.88 VAT= £287.88)	
Non-member	£295.00 (+ £51.63 VAT= £346.63)	
Retired/Student ‡	£105.00 (+ £18.38 VAT= £123.38)	
<b>1 Day Rate 09 December</b>		
Member	£245.00 (+ £42.88 VAT= £287.88)	
Non-member	£295.00 (+ £51.63 VAT= £346.63)	
Retired/Student ‡	£105.00 (+ £18.38 VAT= £123.38)	
<b>Standard Charges per person (after Monday, 27 October 2008)</b>		
<b>1 Day Rate 08 December</b>		
Member	£295.00 (+ £51.63 VAT= £346.63)	
Non-member	£345.00 (+ £60.38 VAT= £405.38)	
Retired/Student ‡	£105.00 (+ £18.38 VAT= £123.38)	
<b>1 Day Rate 09 December</b>		
Member	£295.00 (+ £51.63 VAT= £346.63)	
Non-member	£345.00 (+ £60.38 VAT= £405.38)	
Retired/Student ‡	£105.00 (+ £18.38 VAT= £123.38)	
<b>Two Day Rates</b>		
<b>Early Bird Charges per person (on or before Monday, 27 October 2008)</b>		
Member	£395.00 (+ £69.13 VAT= £464.13)	
Non-member	£495.00 (+ £86.63 VAT= £581.63)	
Retired/Student ‡	£175.00 (+ £30.63 VAT= £205.63)	
<b>Standard Charges per person (after Monday, 27 October 2008)</b>		
Member	£445.00 (+ £77.88 VAT= £522.88)	
Non-member	£545.00 (+ £95.38 VAT= £640.38)	
Retired/Student ‡	£175.00 (+ £30.63 VAT= £205.63)	
<b>TOTAL REMITTANCE</b>		

#### Payment must accompany this registration form.

Registration will only be confirmed on receipt of the full payment.  
Payment via purchase order is not accepted.

- Enclosed is a cheque made payable to "IET" and crossed.  
 Payment by bank transfer (BACS): For information on how to pay by bank transfer call Customer Services on +44 (0) 1438 765 657

Credit card

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Credit card billing address  Postcode

Signature  Date

**\* PLEASE NOTE THAT ALL STUDENTS MUST HAVE THEIR APPLICATIONS ENDORSED BY THEIR PROFESSOR OR HEAD OF DEPARTMENT**

Registration fees include attendance at the sessions, a copy of the digest, morning and afternoon refreshments and lunch. Payments not received before the event may result in entry being denied.

#### BANK TRANSFERS

Bank Transfers (BACS) can be made to Barclays Bank Plc, UK Bank, 1 Churchill Place, London E14 5HP. Account No: 50480606 Sort code: 20-65-82. IBAN GB53 BARC 2065 8250 4806 06.

A copy of the draft must accompany this form. UK Institution of Engineering and Technology VAT Reg No: 240-3420-16. The Institution of Engineering and Technology is registered as a Charity in England & Wales (no 211014) and Scotland (no SC038698).

The Institution of Engineering and Technology, Savoy Place, London, WC2R 0BL.

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