International Conference

Synthetic Aperture Sonar and Synthetic Aperture Radar

17th - 19th September 2014   Villa Marigola, Lerici, Italy
## WEDNESDAY 17 SEPTEMBER

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:45</td>
<td>Registration and Coffee</td>
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<tr>
<td>10:15</td>
<td>Welcome</td>
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<tr>
<td>10:30</td>
<td><strong>KEYNOTE LECTURE:</strong> Synthetic aperture sonar: technology overview and future trends</td>
<td>Roy E Hansen, Norwegian Defence Research Establishment</td>
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<tr>
<td>11:00</td>
<td>Synthetic aperture sonar for humanitarian demining</td>
<td>Thomas G Muir, Charles M Slack III, Martin L Barlett, Mark F Hamilton, Timothy W Hawkins, University of Texas at Austin, USA</td>
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<tr>
<td>11:20</td>
<td>A volumetric approach to SAR interferometry</td>
<td>Daniel Andre, Keith Morrison, Cranfield University, David Blacknell, Dstl, UK</td>
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<td>11:40</td>
<td>Source localisation in a tank with a moving hydrophone array</td>
<td>Sea-Moon Kim, Sung-Hoon Byun &amp; Hyun-Taek Choi, Ocean Engineering System Research Division, Korea Research Institute of Ships and Ocean Engineering (KRISO)</td>
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<td>12:00</td>
<td>A synthetic aperture acoustic prototype system</td>
<td>Steven Bishop, Robert H Luke, Aaron Chan, Pete Guigino, US Army, Mehrdad Soumekh, Soumekh Consulting, UK</td>
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<td>12:20</td>
<td>Lunch</td>
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<td>13:20</td>
<td>Human-computer fusion for improved target recognition with synthetic aperture sonar imager</td>
<td>David P Williams, NATO, Italy</td>
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<td>13:40</td>
<td>Aspects of multi-parameter radar ATR in complex environments: an overview of the work of NATO Task Group SET-163</td>
<td>Luc Vignaud, Onera, France, David Blacknell, Dstl, UK</td>
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<tr>
<td>14:00</td>
<td>Sonar automatic target recognition for UXO remediation</td>
<td>Jason C Isaacs, NSWC, USA</td>
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<td>14:20</td>
<td>ATR fusion in SAS imagery from the MUSCLE sonar on complex seabeds</td>
<td>Joseph Woodward &amp; Gary Davies, Dstl, UK</td>
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<tr>
<td>14:40</td>
<td>Coffee</td>
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<tr>
<td>15:00</td>
<td>Synthetic aperture sonar snippet registration</td>
<td>Samantha Dugelay, CMRE, Italy</td>
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<td>15:20</td>
<td>Automated track extraction for coherent change detection images</td>
<td>Claire Stevenson, Matt Nottingham, Darren Muff, David Blacknell, DSTL, UK</td>
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<td>15:40</td>
<td>Automated seabed change detection using synthetic aperture sonar: current and future directions</td>
<td>Daniel D Sternlicht, NSWC, USA, Vincent L Myers, Defence R&amp;D, Canada, Roy E Hansen, FFI, Norway, Anthony P Lyons, Penn State University, USA</td>
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<tr>
<td>16:00</td>
<td>Motion tracking of internal wave boluses in synthetic aperture sonar imagery using optical flow</td>
<td>Daniel A Cook, Georgia Tech Research Institute, USA, Roy Edgar Hansen, FFI, Norway, Anthony P Lyons, Penn State University, USA</td>
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<tr>
<td>16:20</td>
<td>Questions</td>
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<td>17:00</td>
<td>Close</td>
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## THURSDAY 18 SEPTEMBER

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<thead>
<tr>
<th>Time</th>
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<tr>
<td>08:45</td>
<td>Coffee</td>
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<tr>
<td>09:10</td>
<td>Preliminary results from techniques to determine in situ medium speed of sound using a synthetic aperture sonar</td>
<td>James Prater, NSWC, USA, Timothy Marston, University of Washington</td>
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<td>09:30</td>
<td>A review of spatial coherence theory and its application to synthetic aperture systems</td>
<td>Daniel C Brown, Anthony P Lyons, Pennsylvania State University, Daniel Cook, Georgia Tech Research Institute, USA</td>
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<td>09:50</td>
<td>Correction of spatially variant blurring in circular SAS imager via pseudo-stripmap autofocus</td>
<td>Tim Marston, Jermaine Kennedy, James Prater, NSWC, USA</td>
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<td>10:10</td>
<td>Performance assessment tool for AUV based mine hunting</td>
<td>Olivind Midtgaard, Ivar Alm, Roy E Hansen, Marc Geilhufe, Torstein O Saeba, FFI, Norway</td>
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<tr>
<td>10:30</td>
<td>Coffee</td>
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### Thursday 18 September

#### Improved SAS

**11.00** 360 degree synthetic aperture sonar  
Sean Chapman, Jeremy Dillon, Kraken Sonar Systems, UK

**11.20** Multipath reduction for synthetic aperture sonar interferometry with 2xN array elements  
Ara Hyun, Woaje Seong, Seoul National University, Korea

**11.40** A dual frequency approach for reduction for multipath effects on SAS systems in shallow waters  
Ursula Holscher-Hobing, Eike Kromer, ATLAS, Elektronik, Germany

**12.00** Multiband SAS imagery  
Issac D Gerg, Pennsylvania State University, USA

**12.20** Lunch

#### Multiple Inlet Multiple Outlet

**13.20** Multiple-Input Multiple out-put SAS  
Qiu Hua Tian, Raviraj S Adve, University of Toronto, Canada, Vincent Myers, DRDC, Canada

**13.40** Compressive sensing and target features: an information preserving approach for MIMO SAR  
Giovanni Marion, Dario Tarchi, Michele Vespe, Vladimir Kyovtorov, European Commission, Joint Research Centre, Italy

**14.00** Synthetic aperture imaging and autofocus with coherent mimo sonar systems  
Yan Pailhas, Yvan Petillot, Heriot Watt University, UK

**14.20** Experimental 3-D image formation combining ISAR and MIMO radar processing  
Vladimir Kyovtorov, Dario Tarchi, Michele Vespe, Franco Oliveri, Giovanni Marino, European Commission, Joint Research Centre, Italy

**14.40** Coffee

#### Environmental Effects

**15.00** Comparative study of frequency dependency in high resolution sonar imagery from the MANEX13 sea trials  
Marc Geilhufe, Torstein O Saebø, Olivind Midtgaard, Ray E Hansen, FFI, Norway, Samantha Dugelay, CMRE, Italy

**15.20** Invariant Parameter Estimation across varying seabed's in synthetic aperture sonar imagery  
Chao Chen, Alina Zare, University of Missouri, USA, Tory Cobb, NSWC, USA

**15.40** Simulating SAS imagery of bioturbated sand  
Shawn F Johnson, Anthony P Lyons, Pennsylvania State University, USA

**16.00** Superpixel formation and boundary detection in synthetic aperture sonar imagery  
J Tory Cobb, NSWC, USA, Alina Zare, University of Missouri, USA

**16.20** Questions

**17.00** Close

**18.00** Drinks Reception

**18.30** Conference Dinner

### Friday 19 September

#### Automatic Target Recognition (2)

**09.00** Coffee

**09.30** Reducing false alarms in automated target recognition using local sea-floor characteristics  
Oliver Daniell, Yvan Petillot, Scott Reed, Jose Vazquez, Andrea Frau, Seebyte, UK

**09.50** Cooperative radar engagement using squinted SAR on sea surface target detection  
Tesfaye G Michael, Thomas Lewis, NSWC, USA

**10.10** Environmentally-adaptive automated target detection for synthetic aperture sonar imagery  
John A Fawcett, Warren A Connors, Defence R&D, Canada

**10.30** Operational use of SAR detections for enhancing maritime anomaly detection  
Giuliana Pallotta, Leonardo Millefiori, Karna Bryan, NATO, Italy

**10.50** Application of DPIA Algorithm to SAS Trials Data  
Jonathan Coote, Ruth Aldred, Frazer-Nash Consultancy, UK, Gary Davies, Dstl, UK

**11.10** Questions

**11.30** Chairman’s Closing Comments

**11.40** Coffee and Close
**REGISTRATION FORM**

**Synthetic Aperture Sonar and Radar – 17-19 September 2014**

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Please register me for the conference:

- **Delegate Fees:** (covers the conference, CD Proceedings, refreshments and lunch on two days and Conference Dinner on Thursday 18 September)
  - Fee for Speaker (giving the presentation) £350.00
  - Fee for IOA Members and other speakers £700.00
  - Fee for Non Members £750.00
  - Fee for Students (in full time education) £350.00
  - I would like vegetarian meals

- **Accommodation:**
  Accommodation has been reserved at three hotels in Lerici and details are available on the IOA website www.ioa.org.uk. Bookings should be made direct with the hotel.

- **Proceedings:**
  - I am unable to attend the conference. Please send me a copy of the Conference CD proceedings.
  - Members £20.00
  - Non-Members £30.00

Payment instructions:

There are four ways to pay. Please indicate your chosen method: (CANCELLATIONS ARE NOT REFUNDABLE)

1. **Cheques:**
   - Payable to "Institute of Acoustics" (in £ Sterling drawn on UK bank account)

2. **Direct to Bank:**
   - BACS: Account No: 00375204  Sort Code: 30 94 81
   - SWIFT: LOYDGB21  IBAN: GB27LOYD30948100375204
   - Lloyds TSB Knightsbridge Branch, PO Box 663, 79-81 Brompton Road, London SW1 1DD
   - A copy of the instructions to the bank should be attached with the registration form.
   - Please quote ‘SAR’ and the name of the delegate registered.

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   - Maestro only: Issue No. ________  or Valid from: __/____/____

   Card holders name: (if different from above)

   Card holders address: ____________________________

   Postcode: ____________________________

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