

## UKAN Underwater Acoustic PhD Symposium – University of Bath

On the 16<sup>th</sup> December 2019 the UK Acoustics Network held a Symposium to attract presentations from current and recent PhD students in the field of underwater acoustics. Prof. Gary Heald (Dstl) chaired the organising committee and the event itself. He was supported by Dr Duncan Williams ( Dstl and chair of the UKAN Special interest group in underwater acoustics (SIGUA)), Dr Philippe Blondel ( University of Bath, Physics ) and Dr Alan Hunter ( University of Bath, Mechanical Engineering) and they also chaired the sessions during the day.

The event proved to be very popular with 72 people registering to attend. In addition to Gary and Duncan, 7 other Dstl employees, drawn from Platform Systems Division Underwater Group and Physical Sciences Group, attended the Symposium. 33 of the attendees were either current PhD students or people who had recently completed their PhD. One of the recent students was Dr Julian Deeks, of Dstl Underwater Group, who gave a fascinating presentation about his PhD research on detecting weak signals in highly impulsive noise. Julian graduated this year having completed an external PhD at ISVR, Southampton. 14 current or recent PhD students presented at the symposium from 9 different universities. These were drawn from as far North as Aberdeen and as far West as Exeter. The remainder of the attendees were made up of academic supervisors and staff from companies involved in Sonar and Underwater Acoustics research. This included the Technical Director of Thales UK and the Head of Sonar at Atlas Elektronik UK. A number of other government laboratories were represented including AWE, NPL and UK Hydrographic Office. The list of PhD presentations were:

- Imaging Ocean Waves with Sound Waves and Light Waves. Oscar Bryan– University of Bath
- Low Energy, Passive Acoustic Sensing for Wireless Underwater Monitoring Networks. Gavin Lowes – Newcastle University
- Mechanical scanning image sonar. Chris Moorhead – Aberdeen University
- Passive Acoustic Monitoring using a Towed Array from a Wave-propelled USV. Alfie Treloar University of Bath
- Detecting Weak Signals in Highly Impulsive Noise. Dr Julian Deeks - University of Southampton and Dstl
- A Pulsed Power Driven Transient Underwater Pressure Source. Jessica Stobbs – Loughborough University
- Very Low Frequency Ocean Acoustic Processes. Shaula Garribo – University of Bath
- Autonomous Underwater Gliders for Passive Acoustic Monitoring of the Oceanic Environment. Pierre Cauchy - University of East Anglia
- Coupled Scholte Modes in “Soft” Elastic Plates Underwater. Beth Staples – University of Exeter
- The d36 Mode for Underwater Acoustics. Hannah Rose – University of Glasgow and Thales UK
- Using Acoustic Wavefield Coherence to Control Swarms of Marine Robots. George Rossides – University of Bath
- In Search of the Elusive Clickers: Experiences of an External Mature Student. Dr Edward Harland – University of Southampton
- Synthetic Aperture Sonar for a Low-cost Agile Platform: Preliminary Results. Ciaran Sanford – University of Bath

- Multi-User Broadcast Acoustic Positioning System. Aman Chawla – Newcastle University

After Professor Heald had opened the Symposium and welcomed all of the attendees he introduced the first of the invited speakers, Dr Yan Pailhas, who had flown in from Italy where he now works in The NATO Centre for Maritime Research and Experimentation (cmre). Yan was previously employed at Heriot-Watt University, where he gained his PhD in 2012 and worked on the MoD/ EPSRC University Defence Research Collaboration on Signal Processing (UDRC). During this contract he had frequent meetings with Gary and Duncan who were the nominated points of contact. He gave an excellent lecture on Sonar Design for Object Recognition and Characterisation.

The committee had also invited Professor Cathryn Mitchell ( Director of the Doctoral College, University of Bath) to give a talk about 'The PhD Process'. Many of the feedback forms commented about her insights and advice and even long standing researchers said that they wish that they had heard this when they were starting their PhD. After lunch Gary gave a talk about making a career in underwater acoustics having worked in DERA/Dstl since 1993, also having worked in industry prior to that and his links with academia, including his positions as Southampton ISVR and Heriot-Watt University. The whole symposium committee (+ Ross Heyburn, AWE) are also supervisors of a new PhD student (with iCase funding) and, despite having only started in October 2019, she gave an excellent presentation on Very Low Frequency Underwater Acoustics. The final presentation of the programme was also invited and was given by Dr Andrew Matheison of Thales UK. Andrew gained his PhD from the University of Glasgow in medical ultrasonics and worked at the university for a number of years. He was able to give the attendees an insight into his experiences about moving from academia to industry and from a different discipline into underwater acoustics research.

Dr Duncan Williams, as chair of the UKAN Special interest group in Underwater Acoustics gave the closing speech and commented on the high quality of all the presentations. He also encouraged the current and recent students and early career attendees to continue networking after the event. They could start this straight away as the committee had arranged for these people to have a 'pizza and drink voucher' for one of the university restaurants. The tea and coffee breaks and lunch time also proved useful for networking. The feedback form all contained highly positive comments and there is a strong desire for a repeat event.