



Institute of
mathematics
& its applications

**7th IMA Conference on
Mathematics in Defence
and Security**

**CONFERENCE
PROGRAMME**

7th September 2023

Thursday 7th September

09:30	Welcome and Intro
09:45- 10:15	Keynote Speaker: <i>Richard Pinch</i> Mathematical challenges in security
10:15 - 10:30	Five mathematical challenges for future defence AI - <i>D Snee</i>
10:30 -10.45	Using a Deep Boltzmann Machine for Reinforcement Learning in Cyber Defence- <i>D Kent</i>
11:45 - 11:15	Coffee
11:15 - 11:45	Keynote Speaker: <i>Rachel Craddock</i> Chief Technology Consultant in AI and Machine Learning at Thales
11:45 - 12:00	Geometrical Approaches to over the horizon radar – <i>H Hicks & A Shibu</i>
12:00 - 12:15	Variety Dynamics for taking control of complex Defense and Security contexts- <i>T Love</i>
12:15 - 12:30	What is the Density of a Chirp? Statistics for Swept Frequency Signal Detection - <i>C O'Brien</i>
12:30 - 13:15	Lunch
13:15 - 13:45	Keynote Speaker: <i>Richard Lane</i> Behavioural Analytics: Mathematics of the Mind
13:45 - 14:00	STOAT - An alternative modelling method and model for analysis and decision making- <i>P Donnelly</i>
14:00 - 14:15	MIDAS (Maximum Information Data Acquisition Strategies) for optimal observe orient decide act loops- <i>C Watkinson</i>
14:15 - 14:30	A Multiplayer approach to Sanction Effectiveness with Transport Consideration - <i>T Willis</i>
14:30 - 14:45	Coffee
14:45 - 15:15	Keynote Speaker <i>Tim Watson</i> Defence and Security at The Alan Turing Institute
15:15-15.30	Detecting and quantifying symmetry in large real-world hypergraphs, <i>R.J Sanchez- Garcia</i>
15.30- 15.45	Autonomous Navigation of Unmanned Aerial Vehicles (UAVs) for Border Patrolling: A Stochastic Framework, <i>B Biskin</i>