



## SCIENCE AND TECHNOLOGY ORGANISATION

## SET-315/RSY RESEARCH SYMPOSIUM

on

## Detection, Tracking, ID and Defeat of Small UAVs in Complex Environments

organized by the

## Sensors and Electronics Technology (SET) Panel



to be held in

## Copenhagen, DNK from 9-10 October 2023

This Research Symposium is

**NATO UNCLASSIFIED**  
open to AUS, SWE, and CHE

## Latest Enrolment Date

NATO Nations **11 SEPTEMBER 2023**NON-NATO Nations **11 SEPTEMBER 2023**Enrol on-line at <http://www.sto.nato.int>

All presentations and discussions will be in English

**No conference fee for presenters and participants**

## INTRODUCTION

**General Information**

A Research Symposium aims at promoting exchange of state-of-the-art knowledge among a wide audience on an important scientific or applied topic to enhance the capability of the NATO S&T community to respond adequately to the military requirements of NATO.

Authors are invited to submit papers for this event according but not strictly limited to the list of relevant topics given in this Call for Papers. The Programme Committee will select a number of (position) papers that are considered suitable for presentation at the Research Symposium. Authors will be notified shortly thereafter, whether or not their papers are selected. Authors of selected papers will be provided with information in the Instructions for Authors document, which contains detailed instructions for the presentation, publication of papers, release forms, etc.

**S&T Organization in NATO**

Science & Technology (S&T) in the NATO context is defined as the selective and rigorous generation and application of state-of-the-art, validated knowledge for defence and security purposes. S&T activities embrace scientific research, technology development, transition, application and field-testing, experimentation and a range of related scientific activities that include systems engineering, operational research and analysis, synthesis, integration and validation of knowledge derived through the scientific method.

The mission of the NATO STO is to help position the Nations' and NATO's S&T investments as a strategic enabler of the knowledge and technology advantage for the defence and security posture of NATO Nations and partner Nations, by:

- Conducting and promoting S&T activities that augment and leverage the capabilities and programmes of the Alliance, of the NATO Nations and the partner Nations, in support of NATO's objectives;
- Contributing to NATO's ability to enable and influence security- and defence-related capability development and threat mitigation in NATO Nations and partner Nations, in accordance with NATO policies;
- Supporting decision-making in the NATO Nations and NATO.

**The Sensors & Electronics Technology Panel**

The Sensors and Electronics Technology (SET) Panel is one of the seven Panels under the STB.

The mission of the SET Panel is to foster co-operative research, the exchange of information and the advancement of science and technology among the NATO Nations in the field of sensors and electronics for defence and security. The SET Panel addresses electronic technologies as well as active sensors as they pertain to Reconnaissance Surveillance and Target Acquisition (RSTA),

Electronic Warfare (EW), communications and navigation, and the enhancement of sensor capabilities through multi-sensor integration and fusion.

**SET-315/RSY INFORMATION****Background**

The NATO Science and Technology Organization (STO) highlights the autonomous aspect of UAVs to be one of the Emerging and Disruptive Technologies (EDTs) as a major strategic disruptor. Although UAVs have become essential capabilities for military operation, they are suitable for hostile activities, resulting in a growth in research and development of counter-UAV (C-UAV) technologies and systems. This Research Symposium will provide attendees a forum to discuss State-Of-The-Art (SOTA) technologies, developments, concepts, and operational requirements regarding emerging technologies in these areas. The combination of specialists from various technical and non-technical domains in NATO should foster open and unbiased discussions.

**Objectives**

- Bring together subject matter experts with different points of view on the UAV kill chain, more specifically on the detection, tracking and defeating domains. High-level papers will be presented, and the discussion will spark new ideas.
- Identify areas in which coordinated research efforts between different RTGs are required to expand an understanding of these technologies, their effectiveness, the potential risks and benefits, and how they can be integrated in system that address the whole kill chain.
- Motivate new technical activity proposal integrating different technologies to better address the C-UAV challenge and joint RTG field trials to enhance the collaboration within NATO allies.

**Topics to be covered:**

The proposed Research Symposium will cover a full range of scientific topics relevant to the phases of the kill chain in a counter UAV scenario;

- Search Detect and Track UAVs
  - Multispectral, moving target, change detection...
- Counter UAV techniques
  - Jamming, Dazzling, Capturing, damaging...
- Analyzing the threat of UAVs
  - Data fusion, intent declaration, pattern of life...
- C-UAV System Integration
  - End-to-end systems, M&S, resource management...
- Advanced Techniques
  - In any phase of the kill chain
- ...

## Co-Chair

**Dr. Marc CHATEAUNEUF (CAN)**  
Defence Research and Development Canada (DRDC)  
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**Dr. Karmon STEWART (USA)**  
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## Local Host Coordinator

**Mr. Søren Stentoft HANSEN (DNK)**  
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## Program Committee Members

Roy L. BALLARD (USA), AFRL  
Serkan BENLI, (TUR), Aselsan  
Alexander BORGHAGRAEF (BEL), RMA  
Philippe BROUARD (FRA) ONERA  
Jacobus J. M. DE WIT (NLD) TNO  
Abdullah-Sükrü GÜNER (TUR), Aselsan  
Soren Stentoft HAMMERICH (DNK) DALO  
Laurent HESPEL (FRA) ONERA  
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Jason JOHNSON (USA), AFRL  
José-Antonio RODRIGEZ ARTOLAZABAL (ESP) Gradiant  
Jorge NAYA (ESP) Gradiant  
Thomas NEFF, (DEU), DLR

## Deadlines:

- US Abstracts submission: **12 MAY 2023**
- Abstracts submission: **26 MAY 2023**
- Acceptance notification: **23 JUN 2023**
- US Paper submission: **28 AUG 2023**
- Final paper submission: **11 SEP 2023**

## PRELIMINARY INFORMATION TO AUTHORS

All Authors that wish to be invited to present at the Meeting should send an Abstract as described below.

The Authors selected by the Programme Committee will receive the Instruction for Authors Package from SET Panel office concerning the details of the Paper/presentation, publication, etc.

Please note that the Authors of Papers selected for presentation will not be financially supported by this Organization. You are responsible for your own hotel and travel.

Each speaker will normally have 20 minutes for presentation and 5 minutes for discussions.

## ABSTRACTS

All Abstracts of Papers must be submitted by the deadline stated in the Preliminary Schedule.

Non-US Authors must send the Abstract by e-mail as PDF to both SET-315 RSY Co-Chairs:

Dr. Marc CHATEAUNEUF (CAN) [marc.chateauneuf@forces.gc.ca](mailto:marc.chateauneuf@forces.gc.ca)

Dr. Karmon STEWART (USA) [karmon.stewart@us.af.mil](mailto:karmon.stewart@us.af.mil)

And SET Panel Executive Assistant: [alicia.maharaj@cs0.nato.int](mailto:alicia.maharaj@cs0.nato.int)

US Authors and Non-US Citizens affiliated with US organizations please see the Note below.

The Abstracts (length: 200-500 words) should contain the following information:

- SET-315 Research Symposium on **“Detection, Tracking, ID and Defeat of Small UAVs in Complex Environments”**
- TITLE OF ABSTRACT/PAPER
- TOPIC
- Name of Author/Co-Author(s) Company/Affiliation, complete mailing addresses, telephone, Fax and e-mail addresses
- CONTENT - scope of the contribution, relevance to the Meeting, rationale, conclusions

## NOTE:

SPECIAL NOTICE FOR US AUTHORS AND NON US CITIZENS AFFILIATED WITH US ORGANIZATIONS

Abstracts of Papers from the US must be sent ONLY to the following POC:

NATO CSO US National Coordinator, OASD(R&E)/International Technology Programs - 4800 Mark Center Drive, Alexandria, VA 22350-3600

Country: United States

Phone: +1 571 372-6538/9 Fax: +1 571 372-6471

E-mail: [osd.pentagon.ousd-atl.mbx.usnatcor@mail.mil](mailto:osd.pentagon.ousd-atl.mbx.usnatcor@mail.mil)

All US Authors must include the following statement in a covering letter:

- The work described in this Abstract is cleared for presentation to NATO audiences
- The Abstract is technically correct
- If work is sponsored by a government agency, identify the organization and attest that the organization is aware of submission
- The Abstract is NATO Unclassified; and
- The Abstract does not violate any proprietary rights. requirements, US Authors are encouraged to contact the US POC as early as possible. Delays in meeting POC deadlines will impact the timely submission of your Abstract.

NOTE: 1. Only complete packages (Abstract plus all items listed above) will be accepted by the US POC.

2. After review and approval, the US POC will forward all US Abstracts with the Details of Authors Form to the SET Panel Assistant. All US Abstracts must be received directly from the US POC. US Abstracts will not be accepted directly from Authors

**Enrolment must be made via internet only at**  
<https://events.sto.nato.int>

**Note: if you enrolled for other RTO-STO activities in the past, please use the same e-mail address as previously. If your e-mail address has changed, please inform the CSO contact before enrolling.**

**Enrolment Deadline - 11 SEP 2023**

**If you are unable to enrol via the internet, please contact the SET PANEL Executive Assistant:**  
[SET@cs0.nato.int](mailto:SET@cs0.nato.int)



**NATO Collaboration Support Office (CSO) – SET Panel Office**

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