

Bonn, November 24 – 26, 2025



17th Symposium *Sensor Data Fusion: Trends, Solutions, and Applications*

Technical Program

Location: Universitätsclub Bonn e.V., Konviktstr. 9, 53113 Bonn, Germany. www.uniclub-bonn.de

Organisation

Executive Chairs:

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Day 1 – Monday November 24th Start of SDF Symposium 2025

12:00 – 12:50	Registration
12:50 – 13:00	Welcome & Opening

Session #1: *Advanced Signal Processing*

Chair: Benjamin Rodrigues de Miranda

	Nursultan Daupayev, Paul Reber, Soeren Hirsch
13:00 – 13:30	<i>State-Based Signal Processing with Kalman Filtering for Energy Resource Efficiency</i>
	Ulrich Engel
13:30 – 14:00	<i>On Space-Time Adaptive Processing with Linear-Phase Constraint</i>
	Cosmin Danisor
14:00 – 14:30	<i>Coherent Processing of Multi-Sensors Data for Detection of Stable Scatterers in SAR Images: A Comparative Analysis</i>

Industry Talk #1:

Chair:

	Felix Opitz, Hensoldt
14.30 – 15:00	<i>Modern Data Fusion in the Context of Software Defined Defense: Insights into Current Technology Activities</i>

Coffee

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Session #2: Deep Learning for Target Tracking & Data Fusion

Chair: Michael Hubner

Fabian Engl, Jürgen Mottok, Michael Burmester

15:30 – 16:00

Analyzing the Importance of Spatio-Temporal Patterns in Eye-Tracking Sensor Data for predicting Usability and User Experience

Martina Brötje, Thomas Beck

16:00 – 16:30

Robust Real-Time Multistatic Sonar Tracking with Missed Detections and Measurement Bias using Gaussian Long Short-Term Memory Networks

Marco Mari, Lauro Snidaro

16:30 – 17:00

Ensemble of KalmanNets for Multi-Target Tracking in Cluttered Environments

Kamil Alp Cinar, Tayyip Soner Tekin, Oguzhan Dik, Ahmet Gunes

17:00 – 17:30

Fall Detection Using UWB Distance Measurements with a Hybrid CNNGRU Models

Icebreaker Reception

19:00

*Sion im Carré
In d. Sürst 1,
53111 Bonn*

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Day 2 – Tuesday November 25th

Keynote Talk

09:00 – 10:30

Uwe Hanebeck

Newton-flow Particle Filters based on Generalized Cramér Distance

Coffee

Session #3: Grid-based Estimation & Quantum Computing for Data Fusion

Chair: Fabian Engl

11:00 – 11:30

Daniel Frisch, Uwe Hanebeck

Fokker-Planck Prediction on the Cylindric Manifold using Tensor Decomposition of a Regular Grid

11:30 – 12:00

Norman Bunk, Felix Govaers

Digitized Adiabatic Bayesian Update via Quantum Approximate Optimization Algorithm

12:00 – 12:30

Benjamin Rodrigues de Miranda, Sigurd Huber, Tobias Brosch, Johannes Pardey, Johannes Hauff, Gerhard Krieger

Quantum Optimised Beam Allocation with a Radar Network for Multiple Target Tracking

Lunch

Session #4: Resource Management & Optimization

Chair: Nursultan Daupayev

13:30 – 14:00

Adrian Albert, Peter Stütz

Sensor Performance Models-Aided Target Tracking and Classification for Cooperative Airborne Sensor Platforms

14:00 – 14:30

Taruna Tiwari, Christopher Funk, Shuo Li, Benjamin Noack

Sensor Placement in a Passive Sensor Network for Scan-Based Ship Localization

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14:30 – 15:00

Alicja Szwalek, Xingchi Liu, Chenyi Lyu, Alasdair Hunter, Lyudmila Mihaylova

Bayesian Optimisation for Sensor Scheduling and Tracking with Different Acquisition Functions

Coffee

Session #5: Real-World Applications & Case Studies

Chair: Marco Mari

15:30 – 16:00

Philipp Berthold, Bianca Forkel, Mirko Mählich

A Multi-Vehicle Dataset with Camera, LiDAR, and Radar Sensors and Scanned 3D Models for Custom Auto-Annotation using RTK-GNSS

16:00 – 16:30

Philomena Humburg, Martina Brötje, Robert Logiewa, Jana Kerns, Torsten Fiolka, Sven Fuchs

Automatic Extrinsic Calibration for a Drone Detection System using Cooperative Drones

16:30 – 17:00

Michael Hubner, Kilian Wohlleben, Thanet Markchom, Jonathan Boyle, Stephan Veigl, Andreas Opitz, Anastasios Gkamaris, Romeo Bratskas

Enhancing Maritime Situational Awareness through Multimodal Fusion: Insights from a Real-World Experiment

Gala Dinner

17:30 – 17:45

Awards Ceremony

17:45

Gala Dinner with Piano Performance

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Day 3 – Wednesday November 26th

Industry Talk #2:

Chair:

Toni Fetzer, crown

09:00 – 09:30

Quality Estimation for LLMs via Assignment Problems: An Industrial Data Fusion Application

Session #6: Estimation Theory & Target Tracking

Chair: Dietrich Fränken

Jingyi Yu, Tim Pychynski, Marco Huber

09:30 – 10:00

Multi-Domain Causal Discovery and Downstream Applications in Manufacturing Systems

Simon Steuernagel, Marcus Baum

10:00 – 10:30

Decoupled Quadratic Filter for Extended Object Tracking using Multiplicative Noise

Felix Govaers, Joshua Gehlen

10:30 – 11:00

Probability Density Functions from Neural Networks as an Indicator for Data Robustness

Coffee

Session #7: Localization & Direction Finding

Chair: Jingyi Yu

Dennis Gallenmüller

11:30 – 12:00

An Online Formulation of Direct Position Determination

Jannik Springer, Marc Oispuu

12:00 – 12:30

RF Direction Finding with Radio Frequency System-on-Chip

Lunch

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Session #8: Multi-Source Data Fusion

Chair: Adrian Albert

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| 13:30 – 14:00 | Claudia Malzer, Marcus Baum, Laura Wolf
<i>A Multi-Stage Clustering Framework for Track-to-Track-Association</i> |
| 14:00 – 14:30 | Yifan Zhou, Matthew Bright, John Heap, Andrew Jones, Munir Pirmohamed, Simon Maskell
<i>Signal Detection for Drug Safety Fusing Spontaneous Reporting System and Social Media</i> |
| 14:30 – 15:00 | Philipp Berthold, Martin Herrmann, Dietrich Fränken, Mirko Mählich
<i>Multi-Source IMM-Mixture Track Fusion using a Tree Structure</i> |
| 15:00 – 15:30 | Petr Lukes, James Wright
<i>On Time Intervals and Assignments in Multi-target Tracking Evaluation</i> |

End of SDF Symposium 2025