

# Preface

The Summer Workshop on Interval Methods (SWIM) was initiated in 2008. Since then, it has become an annual keystone meeting with a special focus on the latest scientific developments in interval analysis and its applications. SWIM attracts a broad community of researchers working in the fields of (control) engineering, computer science, and mathematics.

This special issue contains peer-reviewed articles based on work that has been presented during SWIM 2024, held in Maastricht, The Netherlands, and SWIM 2025, held in Rennes, France. During these two events, in total around 40 talks were given.

Out of these contributions, a collection of 11 papers were selected for publication after a thorough peer-review process. These papers focus on the following topics:

- Solving robotics tasks in search and rescue missions, optimal path planning, localization, and pose estimation for smart wheel chairs.
- Systematic tuning of interval observers with applications to set-based state estimation for battery systems.
- Methods for verification on the basis of signal temporal logic, reachability analysis, and uncertainty propagation in dynamic systems.
- Novel methods for computing with sets that represent bounded uncertainty.

This diverse list of contributions highlights the interdisciplinarity of the activities of the community of interval and set-based methods, ranging from fundamental methods and the implementation of associated software tools in the field of computer algebra to the solution of a broad range of engineering applications.

We as the organizers of SWIM 2024 and SWIM 2025 and the guest editors of this Special Issue would like to thank all authors as well as all reviewers for their invaluable contributions which help to make the series of SWIM workshops a success in the community of interval methods and their applications.

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