Preface

The Summer Workshop on Interval Methods (SWIM) is an annual meeting initiated in 2008 by the French MEA working group on Set Computation and Interval Techniques of the French research group on Automatic Control. A special focus of the MEA group is on promoting interval analysis techniques and applications to a broader community of researchers, facilitated by such multidisciplinary workshops. Since 2008, SWIM has become a keystone event for researchers dealing with various aspects of interval and set-based methods.

In 2019, the 12th edition in this workshop series was held at ENSTA Paris, France, with a total of 25 talks.

Traditionally, workshops in the series of SWIM provide a platform for both theoretical and applied researchers who work on the development, implementation, and application of interval methods, verified numerics, and other related (set-membership) techniques. For this edition, given talks were in the fields of

- the verified solution of initial value problems for ordinary differential equations, differential-algebraic system models, and partial differential equations,

- scientific computing with guaranteed error bounds,

- the design of robust and fault-tolerant control systems,

- the implementation of corresponding software libraries, and

- the usage of the mentioned approaches for a large variety of system models in areas such as control engineering, data analysis, signal and image processing.

Seven papers were selected for submission to this Acta Cybernetica special issue. After a two turn peer-review process, six high-quality articles were selected for publication in this special issue. Three papers propose a contribution regarding differential equations, two papers focus on robust control, and one paper consider fault detection.

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Guest Editors