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## FOREWORD

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**Publication date**

2025

**Document Version**

Final published version

**Published in**

IFAC-PapersOnline

**Citation (APA)**

Loiseau, J. J., Boussaada, I., Rocha, P., Quadrat, A., Stoica, C., & Reppa, V. (2025). FOREWORD. *IFAC-PapersOnline*, 59(12), vii.

**Important note**

To cite this publication, please use the final published version (if applicable).  
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International Federation of Automatic Control

# 9<sup>th</sup> IFAC Symposium on System Structure and Control SSSC 2025

Gif-sur-Yvette, France, June 30 – July 02, 2025

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IFAC PapersOnline — ISSN 2405-8963

*Published by:*  
International Federation of Automatic Control (IFAC)  
Hosting by Elsevier Ltd.

*Available online at*  
[www.sciencedirect.com](http://www.sciencedirect.com)

*Publication date*  
July 2025

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# FOREWORD

The 9<sup>th</sup> IFAC Symposium on System Structure and Control (SSSC) was held in Gif-sur-Yvette, France, from June 30 to July 2, 2025, jointly with the 19<sup>th</sup> IFAC Workshop on Time Delay Systems (TDS) and the 2<sup>nd</sup> IFAC Workshop on Control of Complex Systems (COSY).

After the joint conferences held in Grenoble in 2013 and in Montreal in 2022, it was the third time that three events belonging to series organized with the main sponsorship of the IFAC Technical committee 2.2 “Linear Control Systems” are organized together, to permit the researchers from close fields to meet and exchange ideas and new trends.

The program committee has received 189 submissions, that gave rise to 488 review reports, to select the 170 high level communications, from 444 different authors, that formed the final program. Each proposal has received at least 2 review reports. The authors had the possibility to submit an extended abstract, for a dissemination or discussion, or a full paper for inclusion in the proceedings. The preprints distributed to the attendees include 45 extended abstracts and 125 full papers, for 840 pages of scientific reports covering recent research on the topics of the TC 2.2.

A part of the program was shared by the three events. Three plenary talks were delivered by M. Khammash (Designing feedback-controlled cellular systems), E. Zerz (Controlled invariance and collision-freeness: a symbolic computation point of view), and W. Michiels (From Lissajous curves, slack variables and small solutions to constructive design methods for timer-delay systems). They pointed out the challenges and successes of systems and control theory in very active research directions. A panel session on “The future of control: Energy, AI & robotics” permitted to G. M. Arellano, G. Avrin, and G. Boeris, under the moderation of R. Bonalli, to share their insights on the role of control to address major societal challenges.

For the first time an artistic dimension was integrated into the conference identity, through animated logos for each of the three events, a dedicated invited session “When Art and Science meet”, a humoristic cartoon exhibition on control vocabulary and concepts, and an “Art & Control” live show combining live classical music and contemporary dance improvisation inspired by the conference keywords (time-delay, robustness, stabilization, leader-follower, vibration and impulsive control), prepared by L. Pfeiffer and C. Stoica. Finally, a “PhD Students Forum” was organized by C. Stoica, bringing together PhD students, post-doctoral researchers, undergraduate students, with R&D and HR representatives from industry (Axon, MathWorks, MBDA, Omnifactory, Parrot, Solent, Wandercraft) to interact and create opportunities.

The program that was specific to SSSC included 2 semi-plenary sessions, 4 contributed sessions and 5 invited sessions. The two semi-plenary sessions were delivered by L. Pavel (On system theory for learning in games) and P. Rouchon (Quantum error correction and feedback), providing in-depth presentations on topics of exceptional current interest. The 4 contributed sessions were on Feedback control, Systems, Estimation, System & control applications, and the 5 invited sessions on Data driven control I, Computer algebra and control theory I, Data driven control II, New Results in Multidimensional Systems Theory, Computer algebra and control Theory II. The 51 communications gave rise to 35 full papers and 16 extended abstracts, by 130 authors. The present proceedings include the 35 full papers.

The gala dinner of the conference took place on a riverboat of the river Seine, at the foot of the Eiffel tower. It was the occasion to deliver the IFAC System Structure and Control Lifetime Achievement Award to Anna Maria Perdon, for her continuous involvement onto our activities for her whole career. The IFAC Young Author Prize on System Structure and Control was attributed to Raphaël Mahaut, for his presentation of the paper coauthored with Antonello Venturino. Our warmest congratulations are addressed to the recipients.

On a final note, we would like to express our gratitude to the members of the program and organization committees, and to all the reviewers, whose competencies permitted to select high quality communications, sessions chairs, whose involvement assured the sessions success, the staff and volunteers from the organization, who all made this great event possible.

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