19th IFAC Symposium on Automatic Control in Aerospace
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Würzburg, Germany

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Scope
Focusing on aerospace applications, the symposium will cover all aspects of the dynamics, navigation, guidance and control in astronautics and aeronautics, spanning from theoretical studies to industrial applications. It will include navigation, guidance and control of aircrafts, helicopters, missiles, satellites and probes, ELV and RLV launchers. Autonomous, intelligent, unmanned and networked are key words for rapidly evolving fields of aerospace systems. Particularly, cooperative/distributed control for multiple air/space vehicles including formation flight and air traffic control is a hot topic. Space exploration and transportation to planets, satellites, comets, asteroids, etc., is a typical application field of automatic control. Miniaturization progress in electronic technologies, in particular in microprocessors and sensors provides the basis to realize small satellites and micro air vehicles. Here noise effects raise specific control challenges. Emphasis will also be placed on forthcomming trends, perspectives and future research projects are welcome, as well as lessons learned in current projects and technologies. This symposium also encourages students to present results of Aerospace control projects. The working language of the symposium is English.

Conference Location
The IFAC symposium will be held at the Informatics building, Turing-Hörsaal, located at Hubland campus of University of Würzburg and can be quickly reached by public transport from the city center.

Keynote Address
The space pioneers Prof. Dr. Eveline Gottzein (formerly EADS/Astrium) and Wolfgang Wimmer (formerly ESOC) will report first hand from the exciting starting phase of European Space activities and about the foundation of the IFAC TC on Aerospace.

Invited Plenary Presentations
• Challenges in operating the mars science laboratory “Curiosity” rover by Dr. Rick Welch (NASA/Jet Propulsion Laboratory).
• Autonomous formation flying: TanDEM-X, PRISMA and beyond by Dr. Kahle, Dr. D’Amico (German Aerospace Center)

Topics
• Space robotics, including rovers
• Launcher, RLV and ARV guidance and control
• Mico- and Nano aerospace vehicles/satellites
• Engine control
• Space debris mitigation exploration and transportation
• Flexible structure control
• High accuracy pointing
• Guidance, control and estimation theory
• Avionics and on-board equipment
• Flight dynamics identification
• Formation flying
• Cooperative/distributed guidance and control
• Health monitoring, diagnosis and reconfiguration
• Mission control and operations
• Sensor data fusion
• Air traffic management/communication, navigation and surveillance
• Dynamics, control, guidance and navigation of aircraft, helicopter, UAV, spacecraft and missile
• Aerospace student projects

Invited Sessions
• Innovative control techniques and validation: From theory to aeronautical and space industrial application, Organizer: Guilhem Puyou (Airbus) / Martine Ganet (ASTRIUM)
• Spacecraft Guidance, Navigation and Control, Organizer: Yevgeny Somov (Samara State Technical University)
• Missile Guidance Navigation & Control, Organizer: Antonios Tsourdos (University of Würzburg)
• Unmanned Aerial Vehicles, Organizer: Antonios Tsourdos (University of Würzburg)
• Rendezvous and Docking to Passive Objects in Space, Organizer: Philip Necsulescu (University of Würzburg)
**Approach**

Würzburg can be easily approached by frequent trains directly from Frankfurt airport in about one hour. Two ICE high speed train routes cross at Würzburg, as well as three important German motorways (A3, A7 and A81). Thus, access by train or car is very efficient and easy.

**Industrial Visits**

Opportunities for technical visits will be offered to space sites in the region. Near Würzburg are the rocket test range of Lampoldshausen, where Ariane 5 engines have been tested. ESA's Space Operations Center ESOC in Darmstadt is located near Frankfurt airport.

The Intelsat ground station in Fuchsstadt is also close to Würzburg. Near the conference location the Pico-satellite integration facility of Würzburg University is located. It is the home of the first German Pico-satellite UWE-1 (University Würzburg’s Experimental satellite, launched 2005). Here, currently UWE-3 is in final integration and UWE-4 is in its design phase.

**Julius-Maximilians-University Würzburg (JMUW)**

The university, first founded in 1402, enrolls today more than 25000 students in 10 faculties and hosts well known research institutions. 14 Nobel Prize winners worked there, most notable among them being Wilhelm Conrad Röntgen, the discoverer of the X-rays.