

## **RASD 2024**

### **Special Session: Dynamics and control of time-periodic systems**

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Time-periodic systems occur in many engineering and physical applications and have been the focus of scientific research for decades. Recent developments push the boundaries in analysis as well as experimental fabrication of systems with multiple degree-of-freedom. New calculation methods enable the efficient analysis of real systems at the macro-scale like rotors with bearings of variable geometry, wind turbines, cable-stayed bridges, or structural components like plates and beams as well as systems at the micro-scale like MEMS. The prediction of dynamic stability is crucial for a safe operation. Another branch in this field is the design of a time-periodicity for reaching new regions of operation. In signal processing, parametric amplification is used for a long time already. In multi-mode systems one can achieve a similar amplification or safe operation but also a faster transient operation.

This special session welcomes contributions on time-periodic systems in engineering (civil, mechanical, electrical), physics and mathematics to exchange trends in the analysis and real application of time-periodic systems. A wide range of topics is welcomed, especially these:

- efficient numerical analysis,
- improving analytical approximations and analysis,
- control and system reduction,
- experimental implementation and identification,
- effects of strong nonlinearity,
- effects of multi-frequency excitation, e.g. quasi-periodic parametric excitation,
- parametric resonance amplification.

#### **Keywords:**

rotor dynamics, structural dynamics, MEMS, perturbation techniques, dynamic stability