COMPDYN 2025

10th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering

15-18 June 2025
Rhodes Island, Greece

Mini-Symposium 51

Dynamic Response of Engineering Structures: Experimental Techniques, Mathematical Models and Design Methods

You are kindly invited to submit your abstract(s) to MS 51 before 15 November 2024.

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Further details on the conference at https://2025.compdyn.org

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Most engineering structures are subjected to a great variety of dynamic loads in their lifetime. The latter can be caused by earthquake, wind, traffic, wave, blast, rotating machinery or other types of natural or anthropic events. The goal of structural engineering is to limit the damage of structures to achieve functional recovery and resilient design. In particular, the need is to meet acceptable performance levels at present and in the years to come without compromising the ability of future generations to use them, maintain them and benefit from them.

In order to achieve such goals, in addition to traditional approaches, structural engineers have introduced sophisticated dynamic response modification techniques and devices. These range from the use of seismic and vibration isolation, to energy dissipation devices, and to rocking isolation. Also, the development and use of new materials with structural capabilities, such as metamaterials and shape memory alloys, are in the forefront.

To guarantee a suitable design of the above-mentioned engineering structures, researchers need to conduct a significant number of experimental tests, required to study and fully understand their actual nonlinear dynamic behavior. They also need to develop accurate and efficient mathematical models and design procedures.

To this end, the aim of the Mini-Symposium is to share the most recent advances related to the complex dynamic response of engineering structures with particular reference to:

- ***Experimental Studies*:** experimental test results describing the nonlinear dynamic behavior of structures, devices, and innovative materials; video-based vibration analysis of structures; experimental verification of numerical methods and mathematical models; experimental calibration of nonlinear model parameters.
- ***Mathematical Modeling*:** solution strategies and numerical methods to perform nonlinear dynamic analyses; mathematical models devoted to simulating the nonlinear behavior of structures and devices; model parameters identification procedures; simulations performed by adopting existing computer programs, such as OpenSees, Abaqus, ANSYS, MIDAS, NextFEM, Sap2000, and 3D-BASIS.
- ***Structural Design*:** design strategies for structures employing linear or nonlinear devices; optimization design methods; case studies of challenging applications.