Shock and Vibration

Special Issue on

Vibration-Based Damage Identification and Condition Monitoring in Mechanical Structures and Components

CALL FOR PAPERS

Damage detection and identification as well as continuous condition monitoring are some of the most important issues related to proper operation of machines and structural parts in order to ensure their structural integrity, safety, and desirable operational properties. In recent years, an exponential development of vibration-based methods for damage detection and identification as well as condition monitoring used for machines and structures has been observed. This development was possible for two main reasons: the advance of apparatus and measurement techniques in vibration engineering and the development of advanced mathematical tools for signal conditioning and postprocessing. Both of these reasons influence modern trends related to vibration-based damage identification and condition monitoring in mechanical structures and components.

The special issue will focus on recent attempts in development of vibration-based damage identification in mechanical structures, also homogeneous and inhomogeneous structures, especially stressing the later such as advanced composites, and related issues connected with modal analysis and structural dynamic analysis. Moreover, the special issue will cover damage identification and monitoring topics related to theoretical studies and numerical simulations as well as practical solutions, in particular in rotary machinery and vibration-generating devices, structural elements of heavy machinery and vehicles, and so on. Thus the special issue will collect interdisciplinary approaches on vibration-based damage identification and condition monitoring and it will be good motivation to consider and develop some innovative directions of research.

Potential topics include but are not limited to the following:

- Methods and apparatus of vibration-based damage detection and identification
- Damage detection and identification in homogeneous and heterogeneous structures
- Health monitoring in homogeneous and heterogeneous structures
- Damage identification and condition monitoring in machines
- Identification of machinery nonstationary and anomalous operation
- Advanced signal processing methods for vibration-based damage identification and condition monitoring
- Advanced theoretical discussion on vibration propagation and dissipation in technical system
- Damage modeling and simulations
- Practical cases of damage detection and condition monitoring
- Damage assessment under noisy conditions
- Detection of damage considering environmental uncertainty and operational variations
- Damage locating vector
- Transmissibility based methods
- Damage and monitoring analytics
- Techniques on online, real-time condition monitoring of structural components

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Papers are published upon acceptance, regardless of the Special Issue publication date.

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