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COMPUTATIONAL METHODS IN ACOUSTICS AND VIBRATION

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ABSTRACT

Computational modelling of acoustic and vibration phenomena is a key issue in a number of engineering areas. Acoustic problems and noise control in buildings, machines, automotive and railway vehicles, as well as structural propagation of vibration and dynamic fluid/structure interaction, are some examples in which a correct numerical modelling is essential to achieve a good understanding of the physical phenomena involved. In the last decades, there have been significant advances related to the introduction of new numerical methodologies and computational tools, such as Cartesian grid finite element method (cg-FEM), non-conforming meshes, mesh-free methods, PML, PGD, wave finite element method (WFEM), method of fundamental solutions (MFS) [1] and optimization techniques through genetic algorithms (GAs) and gradient-based methods [2], among others. This thematic session aims to gather and discuss a set of recent contributions in the field, associated with new developments, either in terms of computational techniques, or in relation to specific applications. Contributions including experimental validation will be specially valued, as well as those demonstrating the potentialities and advantages of numerical modelling, and/or presenting new applications in the field of acoustics and vibration.

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