

Numerical and experimental results for the frequency response of plates in similitude

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Resumen

The concept of structural similitude provides a powerful tool for engineers and scientists to predict the behaviour of a structure using an appropriate scaled model. Even though theoretical and numerical investigations of similarity conditions or scaling laws have shown to be feasible, their accuracy is not necessarily guaranteed when these laws are applied to real (experimental) structures. Herein, structural scaling laws are investigated for the analysis of the dynamic response of simple flexural plates. Specifically, the possibility to define exact and distorted similitudes is discussed through numerical and experimental data. This paper focuses on exact and distorted similitudes in the analysis of the dynamic response of flexural plates. The similitude laws are defined by invoking the classical modal approach and looking for (in)equalities in the structural dynamic response. A total of seven aluminium rectangular plates with one clamped edge are modelled in finite elements and tested experimentally to study the effect of distorted similitudes and experimental variations in the performance of the predicted dynamic response.

Palabras clave

Palabras clave de autor: [Similitude](#); [scaling laws](#); [modal approach](#); [plates](#)

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