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Cancellation of Transducer Effects from Frequency Response Functions: Experimental Case Study on the Steel Plate

Authors : P. Zamani, A. Taleshi Anbouhi, M. R. Ashory, S. Mohajerzadeh, M. M. Khatibi

Abstract : Modal analysis is a developing science in the experimental evaluation of dynamic properties of the structures. Mechanical devices such as accelerometers are one of the sources of lack of quality in measuring modal testing parameters. In this paper, eliminating the accelerometer's mass effect of the frequency response of the structure is studied. So, a strategy is used for eliminating the mass effect by using sensitivity analysis. In this method, the amount of mass change and the place to measure the structure's response with least error in frequency correction is chosen. Experimental modal testing is carried out on a steel plate and the effect of accelerometer's mass is omitted using this strategy. Finally, a good agreement is achieved between numerical and experimental results.

Keywords : accelerometer mass, frequency response function, modal analysis, sensitivity analysis
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