## عنوان مقاله:

Output-only Modal Analysis of a Beam Via Frequency Domain Decomposition Method Using Noisy Data

## محل انتشار:

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## خلاصه مقاله:

The output data from a structure is the building block for output-only modal analysis. The structure response in the output data, however, is usually contaminated with noise. Naturally, the success of output-only methods in determining the modal parameters of a structure depends on noise level. In this paper, the possibility and accuracy of identifying the modal parameters of a simply supported beam in the presence of noise has been discussed. The output-only modal analysis method with frequency domain decomposition was used and output data with various noise levels were considered. Initially, finite element modal analysis was used to determine the modal parameters for the beam which were afterwards enforced as the reference modal parameters. Then, appropriate input was applied to the beam and the acceleration signals of different nodes were produced through finite element transient analysis. In order to simulate noisy data, noises with different power levels were generated and added to the signals. Finally, the modal parameters were obtained by frequency domain decomposition method. The results showed that the modal parameters corresponding to the first vibration mode could only be identified with acceptable validity at low to moderate noise levels, whereas for higher modes, the modal parameters can be correctly obtained even at high noise levels.

## کلمات کلیدی:

Frequency Domain Decomposition, Modal Parameters, Noise level, Output-only Modal Analysis, Simply Supported Beam