

Output-only modal parameters identification for time-varying structures based on multisensory S-transform

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ABSTRACT

The method of identifying output-only modal parameters for time-varying structures is proposed in this paper. A novel multisensory S-transform is utilized to study the parametric modal identification of time-varying structures based on two or more different spatially sensors with non-stationary characteristics. Relying on the phase-preservation property of S-transform and phase synchronization of the cross-spectral analysis, the multisensory S-transform can be used to extract the modal parameters of time-varying structures. The efficiency of the proposed multisensory S-transform is successfully validated through numerical simulations applied to a simple supported beam with a moving mass.

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