A damage localization method based on the singular value decomposition (SVD) for composite plates: numerical studies

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Abstract

Boundary effect and the noise robustness are the two crucial aspects which affect the effectiveness of the damage localization based on the mode shape measurements. In order to overcome the boundary effect problem and enhance the noise robustness in damage detection, a simple damage localization method is proposed based on the Singular Value Decomposition (SVD) for the mode shape of composite plates. Numerical validations are performed on composite structures. Validations show that the proposed method is accurate and effective in the damage detection for the two-dimensional composite structures.

Keywords: damage localization; singular value decomposition; composite plate