Finite Element Model Updating Using the Local Correspondence Principle

In this paper, an overview of a Finite Element (FE) model updating technique based on the Local Correspondence (LC) principle is presented. The main idea behind the LC technique is to update the FE model by replacing the mode shape vectors and natural frequencies with their corresponding experimental counterparts obtained from an output-only modal testing. This is accomplished by taking advantage of the fact that the inverse mass and stiffness matrices can be expressed as a linear combination of outer products of the mode shape vectors. Aiming at discussing the LC technique from a practical perspective, a simulation study is presented to illustrate its ability to improve the Maximum Assurance Criterion (MAC) between the FE and experimental mode shape vectors so that it gets close to unity.

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