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论文

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分枝模态综合法的逆问题

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AN INVERSE PROBLEM OF THE BRANCH MODE SYNTHESIS

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摘要

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摘要 本文基于李兹分析论述了分枝模态综合法的逆问题,即结构的一个分枝系统的模态特性如何利用结构和其它分枝系统的模态特性而识别出来。其分析方法可应用于结构动态设计和结构模型修改问题。

关键词: 模态综合 动力逆问题 李兹分析 动态设计 模型修改

Abstract: The Branch Mode Analysis developed by G. M. L. Gladwell is a dynamic computational procedure in which the vibration modes of a complete structure are synthesized from modes of branch systems into which the structure is divided. The inverse problem of the Branch Mode Synthesis presented herein is how to identify the modal behavior of a branch system from modes of the complete structure and the other branch systems. In the paper, for simplicity, a Ritz analysis of the inverse problem only for a structure divided into two branches is discussed, and the inverse problem for a structure into more branches is then solved by using both the Branch Mode Synthesis and the in -verse analysis for a structure into two branches. The presented results of the two computational examples have verified the correctness of the above inverse analysis. The inverse analysis of the Branch Mode Synthesis is applicable for the problems of dynamic design and analytical model updating of structures.

Keywords: mode synthesis dynamic inverse problem Ritz analysis dynamic design model updating

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