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用试验数据修正刚度矩阵

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STIFFNESS MATRIX CORRECTION USING TEST DATA

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摘要

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摘要 讨论用试验数据修正刚度矩阵的问题。依据特征方程、刚度矩阵的对称性和半正定性,利用代数特征值反问题的理论和方法,研究了这个问题解的存在性和唯一性,提出了修正刚度矩阵的一个新方法。用这个方法修正的刚度矩阵不仅满足特征方程,而且是唯一的对称半正定矩阵。

关键词: 结构模型 动态试验 反问题

Abstract: The problem of stiffness matrix correction using test data is discussed in this paper. Based on the characteristic equation, the symmetry and positive semidefiniteness of stiffness matrix, the existence and uniqueness of solution to the problem is studied by means of the theory and method of the algebraic inverse eigenvalue problems. A new method of stiffness matrix correction is presented. The stiffness matrix corrected by the method not only satisfies the characteristic equation, but also is the unique symmetric positive semidefinite matrix.

Keywords: structural model dynamic experiment inverse problem

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