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基于子空间旋转算法的实桥损伤识别

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Damage Identification of Actual Bridge Based on Subspace Rotation Algorithm

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摘要 子空间旋转算法就是基于结构模型参数的损伤识别方法之一. 子空间旋转算法基于结构的有限元模型, 利用矩阵变换的方法, 将损伤位置和损伤程度问题区分开来, 实际应用表明, 只需利用一阶频率和振型, 就可以识别桥的主要损伤位置和损伤程度.

关键词: 损伤识别 子空间旋转算法 桥梁

Abstract: Structural damage identification is critical to the reliability evaluation of structures. Now damage identification method based on parameters of structural model is one of the research hotspots. Subspace Rotation Algorithm introduced in this paper belongs to the damage identification method based on parameters of structural model. Subspace Rotation Algorithm is based on finite element method of structures,use the matrix transform method and separates the damage location and damage extent problems and is computationally inexpensive. Subspace Rotation Algorithm is used to detect damage of an actual bridge in this paper and practice testifies that Subspace Rotation Algorithm only needs the first order frequency and shape mode to identify the main damage location and damage extent of the actual bridge so that it is simple in calculation and feasible.

Key words: damage identification Subspace Rotation Algorithm bridge

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