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粘弹阻尼结构模态灵敏度分析的模态展开方法

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MODAL SUPERPOSITION METHOD FOR MODAL SENSITIVITY ANALYSIS OF VISCOELASTICALLY DAMPED STRUCTURES

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摘要

建立了粘弹阻尼结构的模态灵敏度分析的模态展开方法，其形式较为简单，与粘性阻尼结构灵敏度分析的模态展开法相类似，计算较为简便。并对有限自由度的离散粘弹阻尼结构的算例进行了振动模态灵敏度分析。

关键词： 粘弹性　模态分析　灵敏度

Abstract：

A modal superposition method for modal sensitivity analysis of viscoelastically damped structures is established based on a simplified form of modal analysis of viscoelastically damped structures, in which the modal sensitivity can be calculated using the modes obtained. Its form is simple and similar to the form of the modal superposition for modal sensitivity analysis of linear viscously damped structures, so the calculation is much simpler. The method proposed lays the foundation of dynamic design and structure modification of viscoelastically damped structures. An example of sensitivity analysis of the vibrating modes of a limited freedom discrete viscoelastically damped structure is given. The example demonstrates that the contribution of creeping modes to the sensitivity analysis of eigenvectors of vibrating modes is small and the calculation has a good accuracy when the sensitivity of eigenvectors of many vibrating modes is calculated.

Keywords： viscoelast icity　modal analysis　sensitivity

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