

学术论文

钢筋混凝土结构非线性阻尼地震反应谱研究

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摘要: 阻尼比对结构的地震反应有重要的影响,目前结构抗震设计阶段通常取阻尼比为常数,不能真实反映建筑物的阻尼机理。基于对钢筋混凝土建筑物非线性阻尼比的分析研究,通过数值分析,提出了建筑抗震设计反应谱的非线性阻尼比修正系数,建立了非线性阻尼比地震反应谱曲线。该曲线不仅考虑了设防烈度和场地条件对建筑物地震反应的影响,也可反映建筑物不同结构类型和结构振动过程中阻尼性能的变化对结构地震反应影响。非线性阻尼比地震反应谱曲线与现行建筑抗震设计规范中标准地震反应谱曲线之间能保持理论体系上的一致性,对工程设计具有一定的参考价值。

关键词: 非线性阻尼比 反应谱 抗震设计

Study on non-linear damping ratio response spectrum of reinforced concrete buildings

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Abstract: Damping ratio,as a parameter that reflects capacity of dissipating energy and has significant influence on the vibrations of buildings,is regarded as a constant in the seismic design at present.It can not reflect the actual damping mechanism of buildings.Based on the non-linear damping ratio mechanism of reinforced concrete buildings proposed by the authors and numerical analysis,some non-linear damping ratio modification coefficients for seismic design spectrum are proposed,and non-linear damping ratio seismic design spectral models are established in this paper.The effect of seismic fortification intensity,site condition,structural type and the shift of damping ratio on the seismic response of buildings are taken into account in the seismic design spectrum.The spectral model with nonlinear damping ratio is in line with present seismic design spectral curves recommended in Chinese code for seismic design of buildings.

Keywords: response spectrum seismic design

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