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隔振系统限位器的非线性动力学设计

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DESIGNING ELASTIC CONSTRAINTS IN A VIBRATION ISOLATION SYSTEM FROM THE VIEWPOINT OF NONLINEAR DYNAMICS

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摘要

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摘要 根据经典线性理论设计隔振系统弹性限位器的约束空间往往太小, 在小阻尼情况下会诱发非线性共振, 使隔振系统变为放大系统。从非线性动力学角度讨论了弹性限位器的设计问题, 给出了若干设计原则及参数选择范围

关键词: 隔振限位器 非线性动力学设计

Abstract: A study is presented as to how to design elastic constraints in a vibration isolation system, which is a crucial problem found in engineering practice. It is pointed out that the constraint space designed according to the classical linear theory is usually so small that the isolation system most likely undergoes nonlinear resonance in the case of small damping. As a result, the isolation system becomes a vibration amplifier. Then, the design of elastic constraints is analyzed from the viewpoint of nonlinear dynamics. Some design principles and the range of parameter selection as well are discussed.

Keywords: vibration isolation elastic constraint nonlinear dynamic design

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