

Vibration Control of an Optical Table by Piezoelectric Transducers

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Abstract

This paper proposes the design and control of an optical table. As technology is advanced, the requirements for vibration control are becoming increasingly stringent. Optical tables are normally applied to suppress vibrations for improving system performances. There are two main vibration sources, namely load disturbances from the machine and ground disturbances from the environment. However, the suspension settings to isolate these two disturbances are conflicting: they need to be *soft* for the ground disturbances but *stiff* for the load disturbances. Therefore, we apply disturbance response decoupling techniques to independently treat these two vibration sources: using passive elements to suppress ground disturbances, and active piezoelectric transducers to improve load responses. From the simulation and experimental results, the design is deemed effective.