

VIBRATION ISOLATION IN A MICROGRAVITY ENVIRONMENT

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EXTENDED ABSTRACT

Many in-space research experiments require the microgravity environment attainable near the center of mass of the proposed Space Station. Since dynamic disturbances to the surrounding structure may undermine an experiment's validity, isolation of these experiments is imperative. Analytical and experimental work has been completed in developing an isolation system which allows the payload to float freely within a prescribed boundary while being kept centered with forces generated by small jets of air. An experimental setup was designed and constructed to simulate the microgravity environment in the horizontal plane. Results demonstrate the air jet control system to be effective in managing payload oscillatory response. An analytical model was developed and verified by comparing predicted and measured payload response. The mathematical model is used to predict dynamic payload response to disturbances likely to be present in the Space Station.

The figure shown below is a schematic of the test setup to be discussed during the presentation.

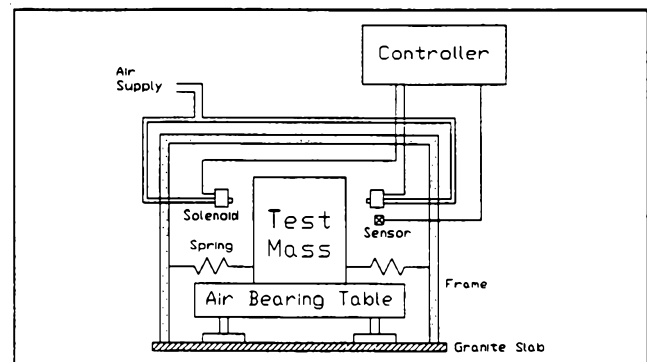
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Air Jet Controller Setup