

## Active Vibration Isolation using Stewart Gough Platform

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### Abstract

The paper describes the design of a Stewart Gough Platform for isolating sensitive payloads from onboard vibration-emitting-components of a spacecraft e.g. cryogenic coolers and momentum wheel etc. The design is for isolating onboard milli g level vibrations primarily in three orthogonal translational axes and to survive the launch loads. The six legs connecting moving and base plates using spherical joints with axial rotation of legs constrained, contains linear actuator collocated with force sensor. A decentralized force feedback controller which uses PID control law with single gain for all six loops is used for actively attenuation the vibration coming from base platform. The transfer functions defined between base plate and moving plate accelerations is considered as a measure of isolation. An isolation of more than 20 dB beyond 40 Hz was demonstrated.

**Keywords:** Vibration Isolation, Stewart Gough Platform, PID controller.

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