

## Contact

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Reference: Vibration Filter

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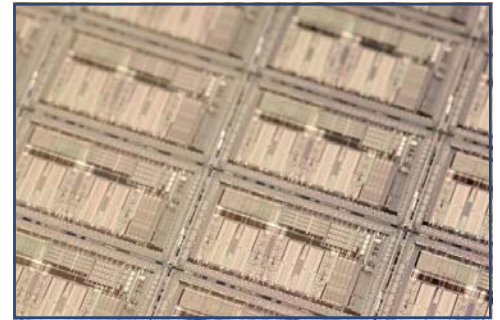


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## A MEMS Device to Filter Mechanical Vibrations

### Overview

Auburn University is seeking a licensee or development partner for a device that filters mechanical vibrations in MEMS devices. This invention is based on comb drive actuators that provide multi-dimensional vibration isolation and tunable damping of vibrations at less cost and/or with better performance than current alternatives.



### Advantages

- Provides sufficient levels of vibration damping for MEMS devices
- Creates a tunable system, providing greater control
- More broadly applicable than fluidic packaging
- Expected to be less expensive than fluidic packaging

### Description

Some micromachined (or MEMS) devices, such as many MEMS gyroscopic sensors, are extremely sensitive to and adversely affected by high frequency vibrations, which may be present in the environment in which the sensors are used. In order to use these kinds of devices in mechanically harsh environments, they must be protected from high frequency vibrations. This can be accomplished by fabricating a MEMS vibration filter and incorporating it into the sensor package to isolate the sensor die from high frequency vibrations. Passive and previous spring-based vibration filters have been investigated for this purpose. Unfortunately, they lack tunability and/or fail to achieve sufficient damping.

Auburn's comb drive actuator-based system provides sufficient and tunable mechanical damping of MEMS devices, expected to be at less cost than other methods (such as fluidic packaging). This technology performs vibration isolation by detecting relative motion between comb elements and then generating an appropriate electrostatic force to counteract the undesirable relative motion. This active damping approach improves upon the spring-mass-damper vibration isolation MEMS structure and also provides tenability for broader applications and more flexibility.

### Status

- US Patent [7,355,318](#)

### Licensing Opportunities

- This technology is available for exclusive or non-exclusive licensing
- Joint development opportunities include funded research or direct collaboration