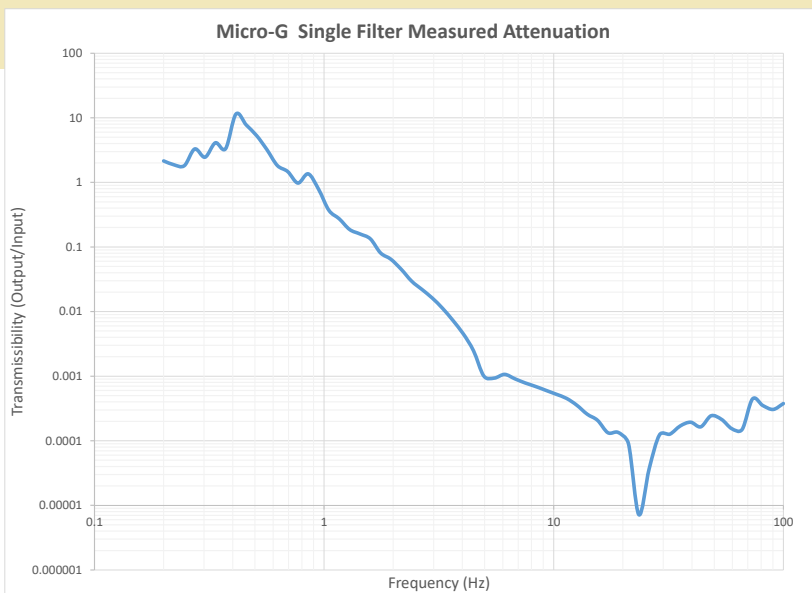
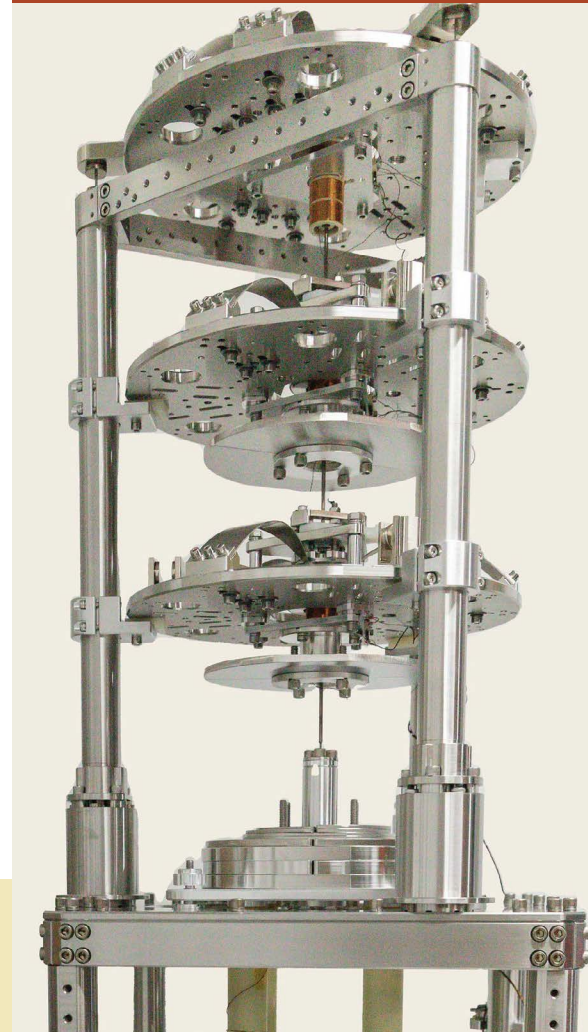


The Micro-G anti-vibration module attenuates mechanical noise by a factor of 1,000-10,000 for important frequencies over 5 Hz. It consists of a series of spring-based mechanical filters—with outstanding vibration isolating capabilities, supporting a payload. The GAS filters are tuned to have a natural resonant frequency of less than 0.5Hz. The Micro-G vibration attenuation module can be integrated into optical cryostats or dilution refrigerators, or may be applied equally well to room temperature systems.

The image (right) shows a series of GAS filters mounted above with a vertical suspension wire that extends down to support the payload being stabilized. The Micro-G cryostat is integrated with a Pulse-Tube cryocooler and the cooling power is transferred to the vibration isolated payload via our flexible ultRRRa straps. The cryogenic payload is stabilized at 4K within a 4K radiation shield. In this system, accelerations are reduced to $\ll 1E-6$ g/rtHz.

Common applications include quantum cavities, nano-particle traps, atomic clocks, scanning probe microscopy.



The graph (left) shows the system transmissibility of a single GAS filter versus frequency. Attenuations are greater than 1000:1 for frequencies over 5 Hz. When multiple filters are used, their performance is superimposed.

KEY FEATURES

- Inverted Pendulum Stage for XY Vibration Attenuation
- Linear Variable Differential Transformer (LVDT) vertical position feedback
- Voice Coil Actuator for short/long term position control
- Eddy current damping
- ultrRRRa straps for maximum conductance/minimal stiffness cryogenic cooling
- Configuration user payloads up to 10kg.
- Integrates with low vibration Pulse-Tube cryocoolers

OPTIONS

Bakeout: Integrated bakeout hardware. Pressure (before cooldown, after bakeout): $<1 \times 10^{-8}$ torr

Connections per ISO flange: All thermally heat sunk at 40K and 4K

- 24 DC user connections, integrated and heat sunk at 4K cold plate, using Micro D25 connector
- 4x RF Cables, flexible coaxial lines. SMA on outside, SMP at 4K
- 2x Fiber Optic Feedthrough - FC/APC.

ABOUT US

Four Nine Design makes robust cryogenic products to accelerate research and scientific achievement in the emerging quantum market. We can customize these solutions to meet unique requirements of our users. Our mission is to use our skills, resources, and capabilities to have a positive impact on the world.

