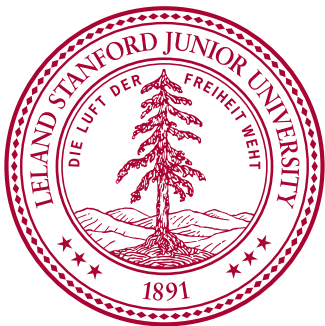
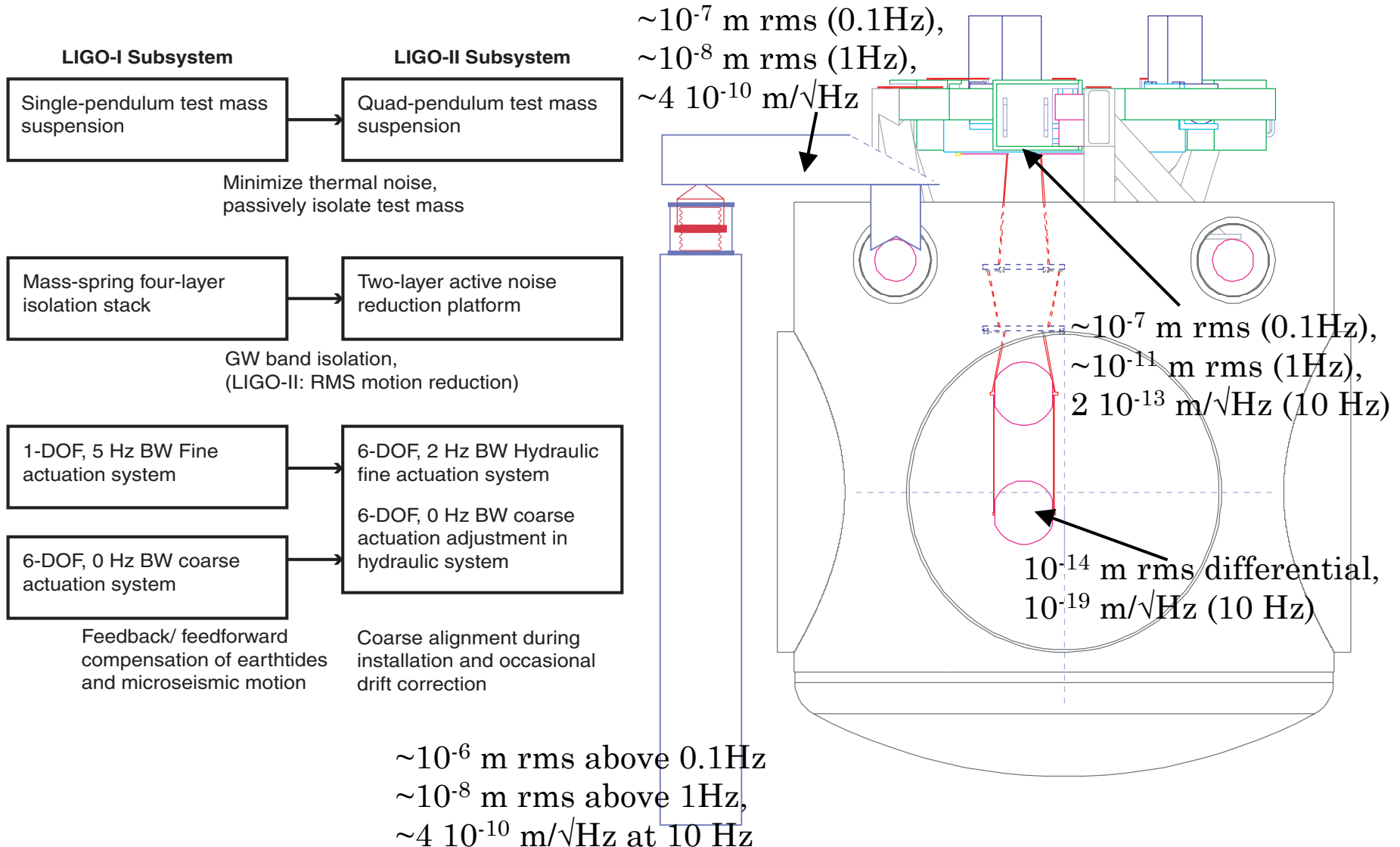


# Advanced LIGO Seismic Isolation Status

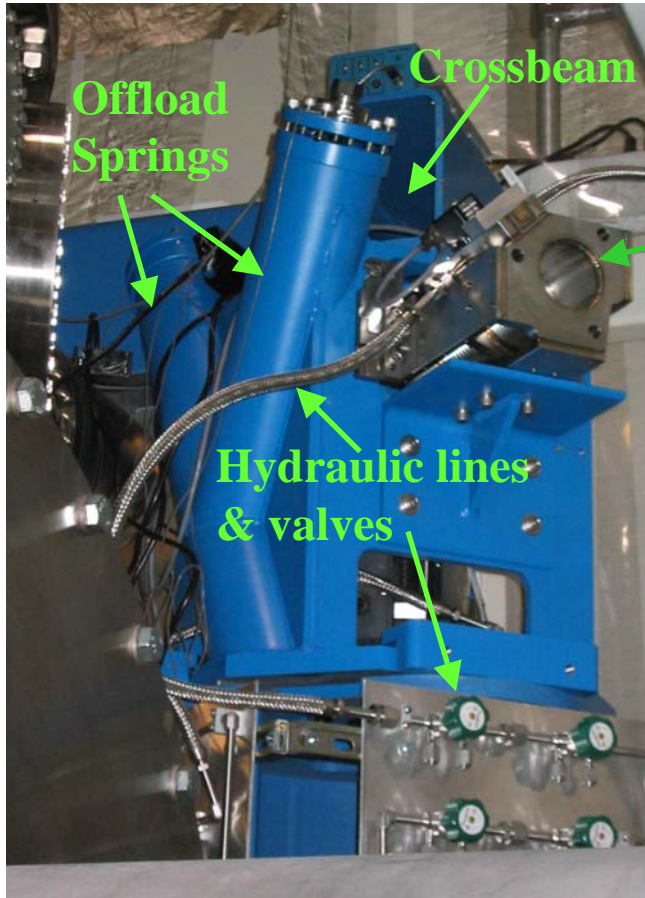
Rich Abbott, Graham Allen, Drew Baglino, Colin Campbell, Dennis Coyne, Daniel DeBra, Jeremy Faludi, Amit Ganguli, Joe Giaime, Marcel Hammond, Corwin Hardham, Jay Heefner, Wensheng Hua, Jonathan Kern, Joe LaCour, Brian Lantz, Ken Mailand, Ken Mason, Rich Mittleman, Jamie Nichol, David Ottaway, Joshua Phinney, Bill Rankin, Norna Robertson, Kyle Ryan, Pradeep Sarin, Ray Scheffler, David Shoemaker, Oddvar Spjeld, Joe van Niekerk, LIGO CDS, and the Livingston Staff



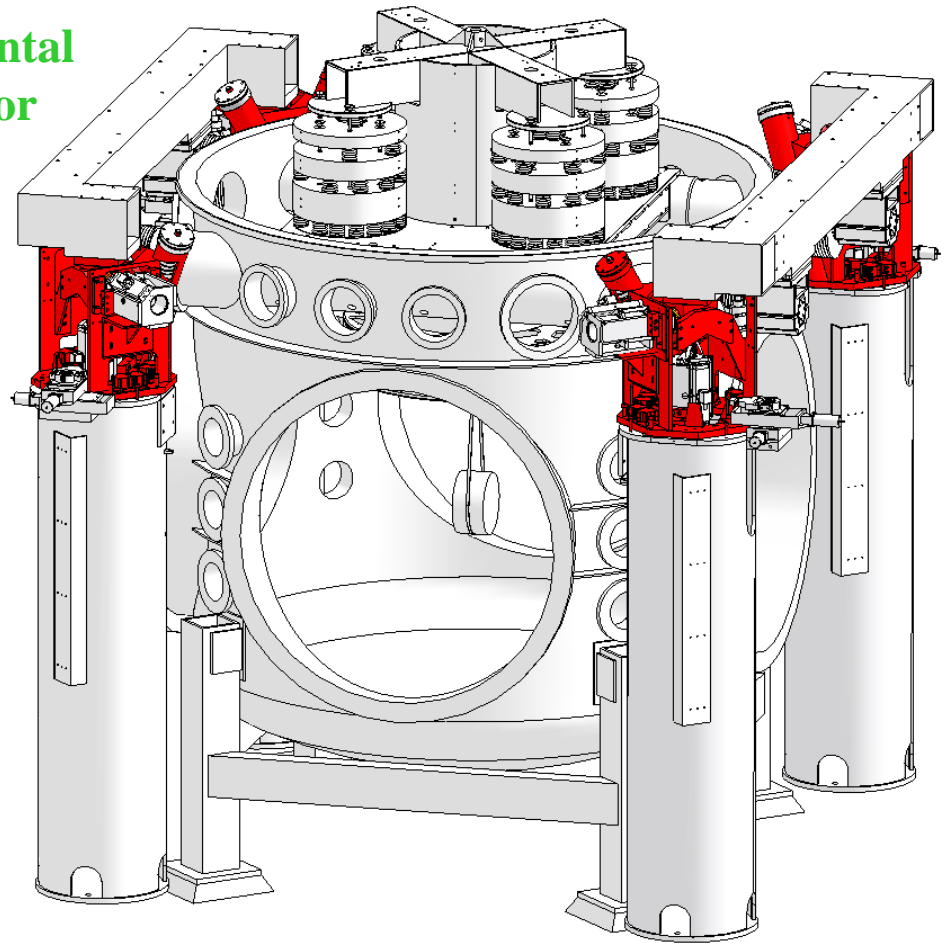
# Seven Layers of Isolation and Alignment



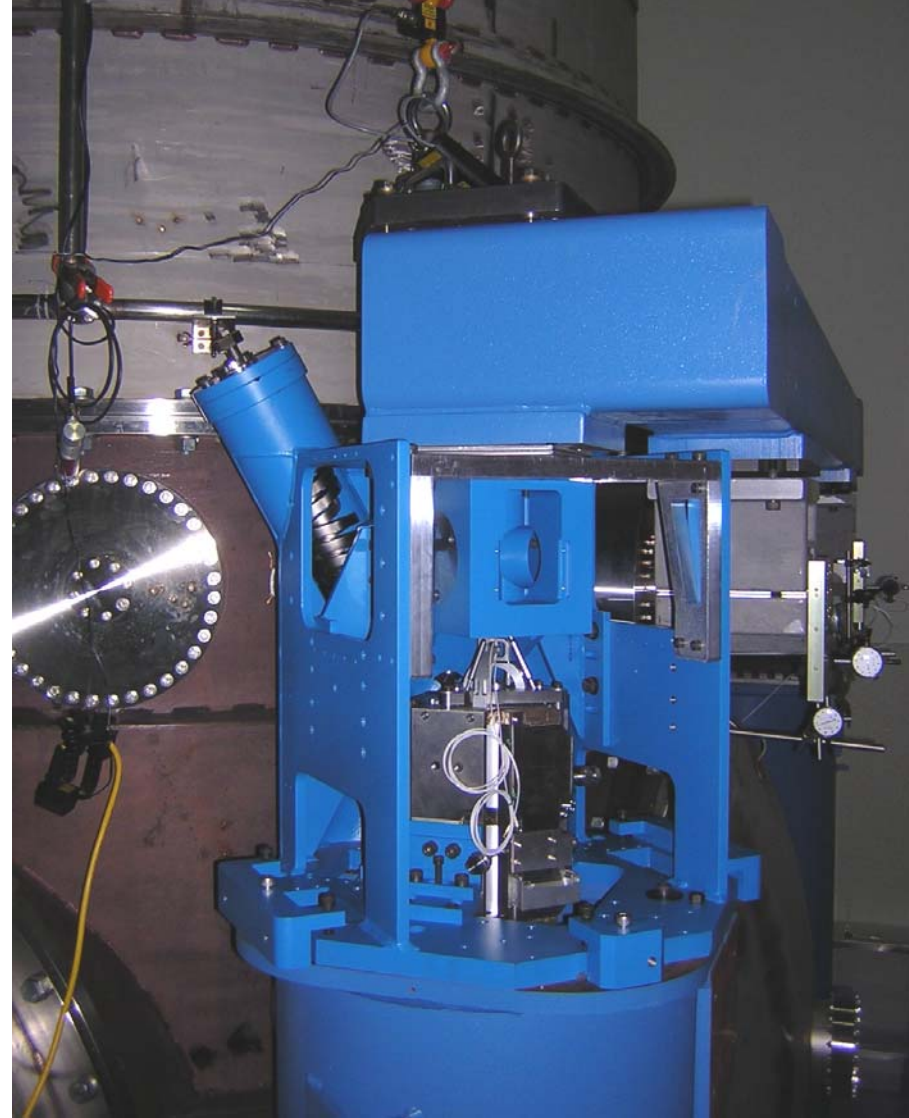
# External Pre-Isolator



Horizontal Actuator



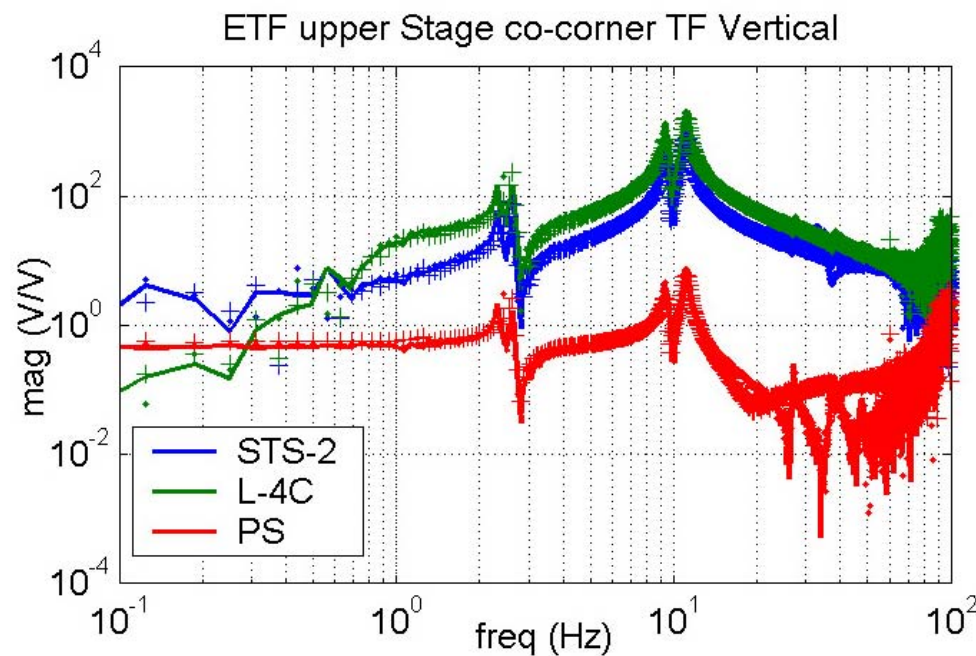
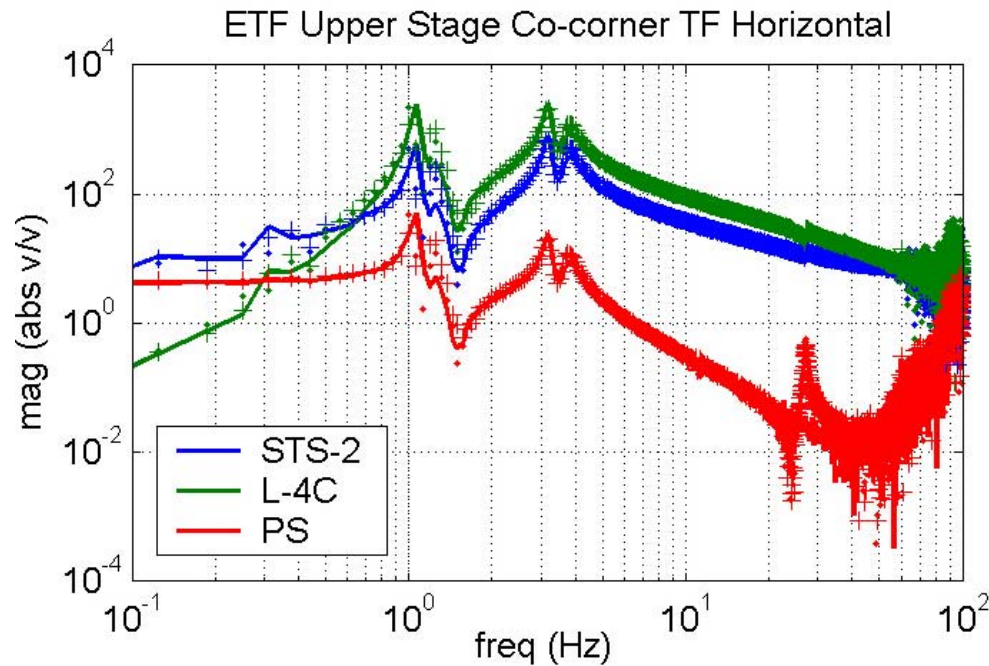
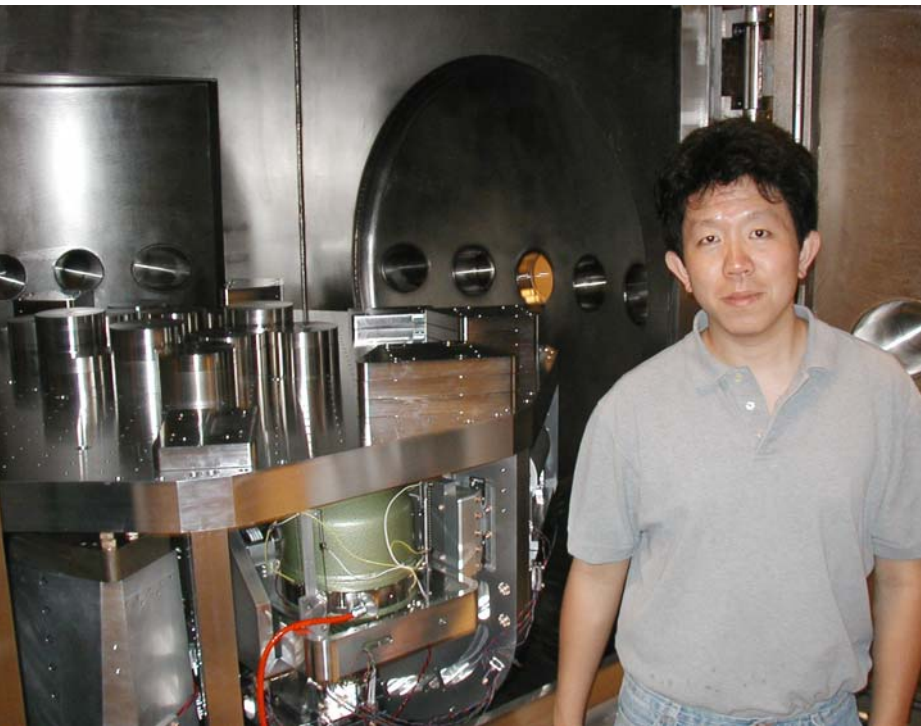
Pre-Isolator, finally getting a real job...





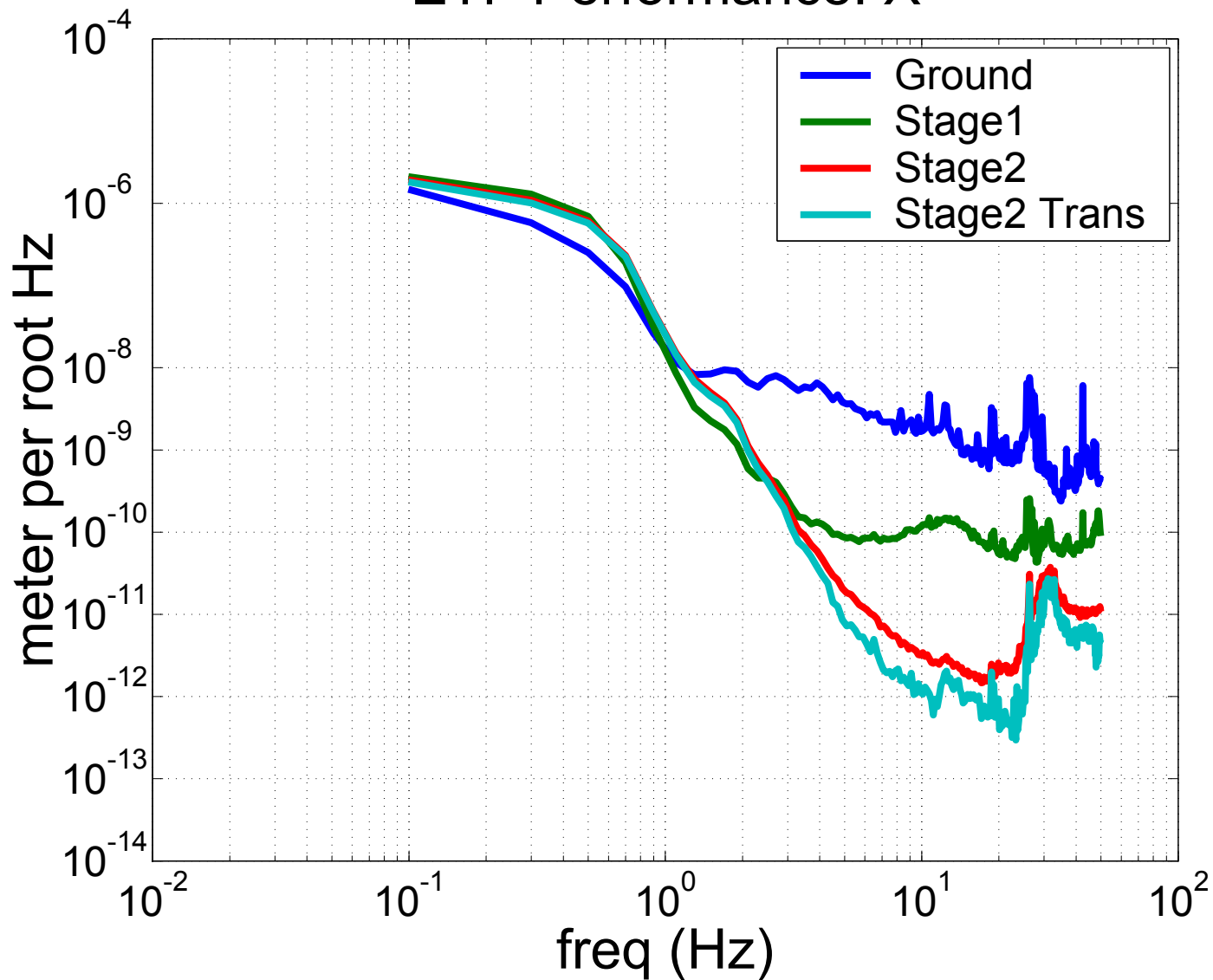
# ETF Tech Demo

## Sys-ID

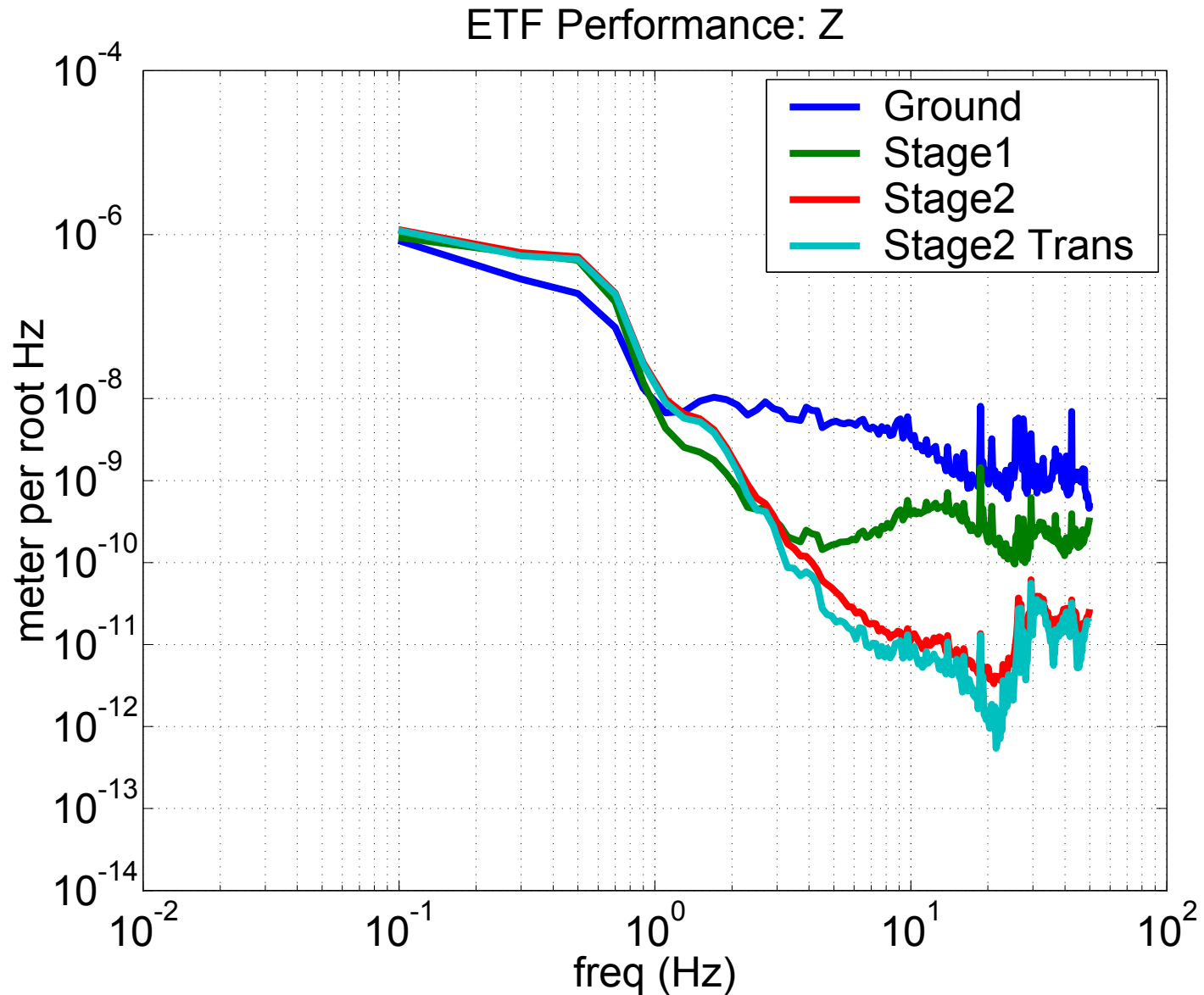


# ETF Tech Demo - First Performance

## ETF Performance: X



# ETF Tech Demo - First Performance



# The LASTI prototype

Compatible with  
LIGO-vacuum

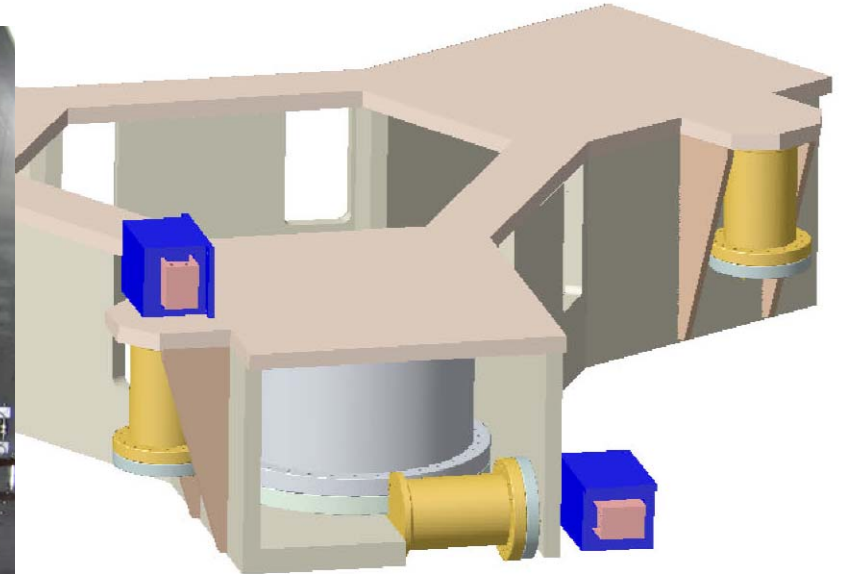
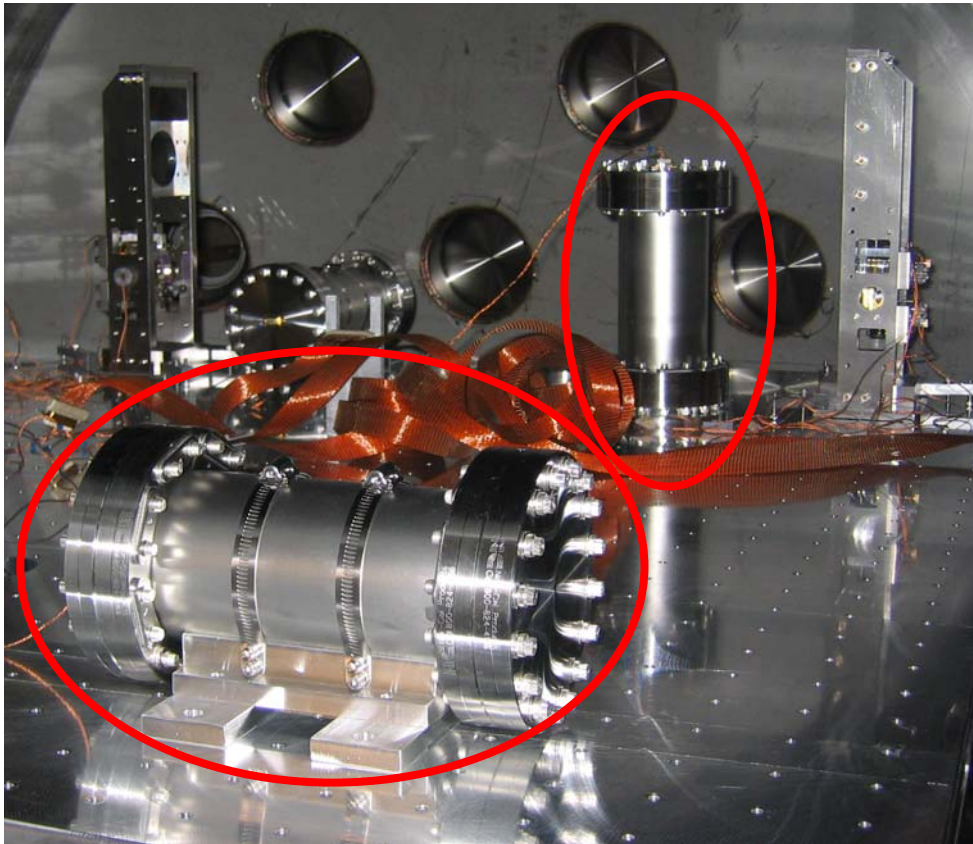
Supports all of the optic  
payloads for Advanced LIGO,  
with good performance





# LASTI Prototype - Sensors

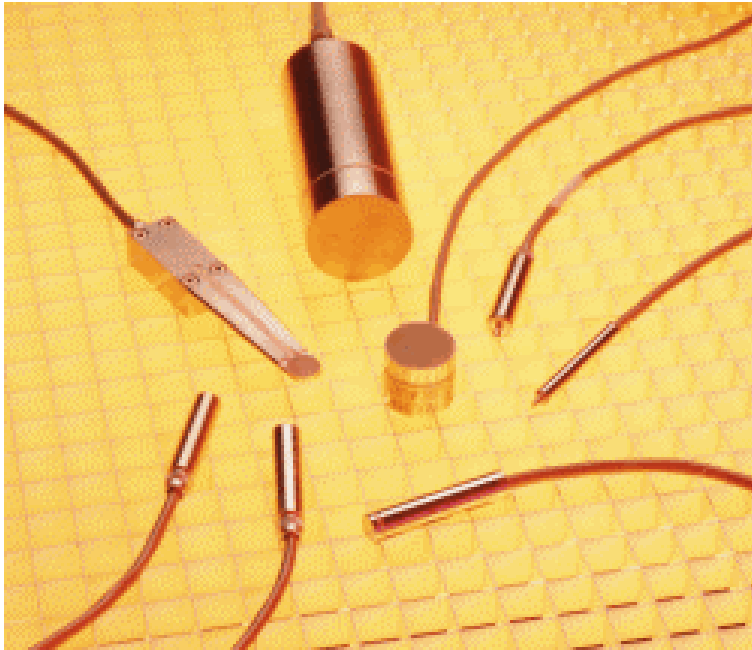
working to make the sensors LIGO-vacuum compatible



use standard conflat hardware

example of technique, at LASTI

# LASTI prototype - Sensors



Capacitive sensor ought to be vacuum compatible –  
“just” wires and plates  
Larry, Kyle, LIGO ringdown  
ovens working to OK the  
coax cables, epoxies

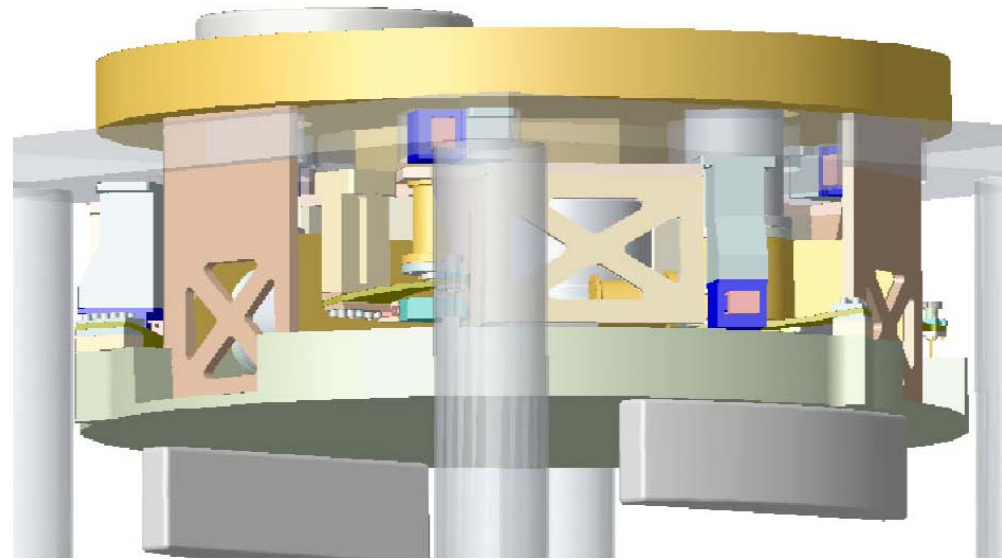
# LASTI Prototype - Actuators



ongoing contract talks with vendors to make an Advanced LIGO version.

LIGO-compatible materials,  
good thermal properties,  
good magnet field geometry.

# LASTI Prototype Plant

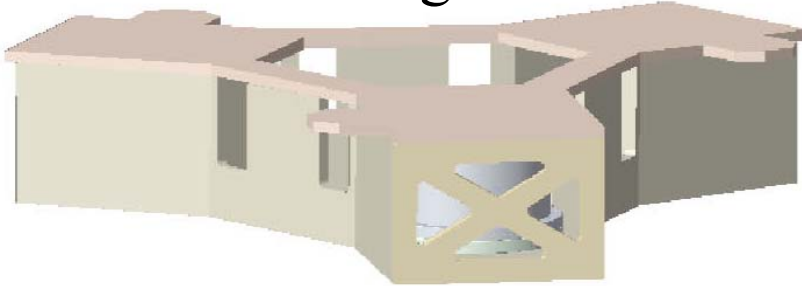


design by  
Alliance Space-systems Inc. (ASI)

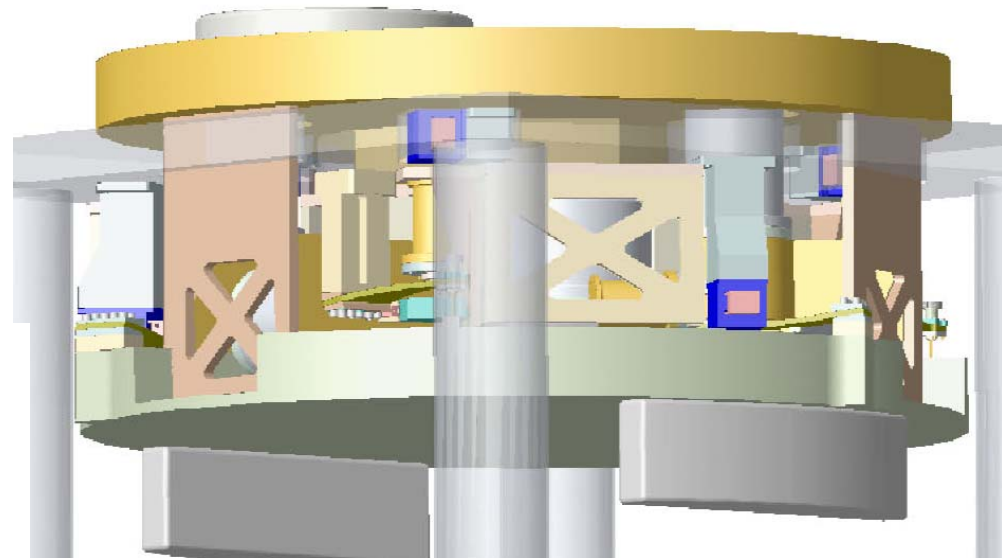
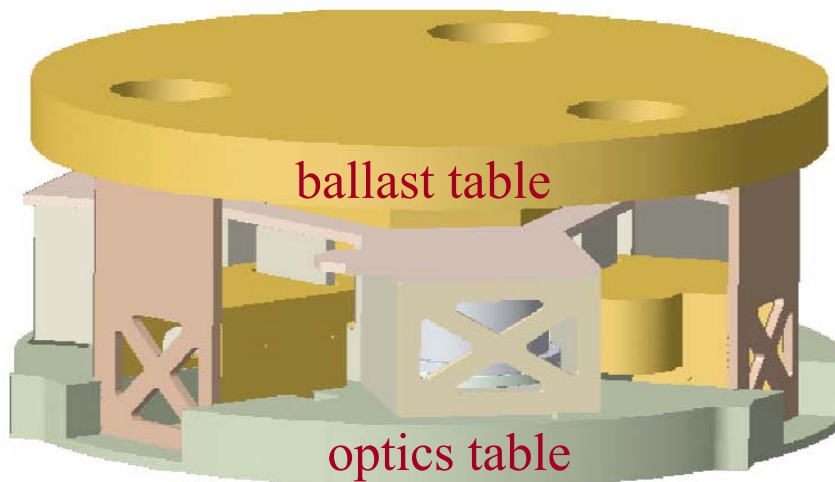


# LASTI Prototype Plant

stage 1

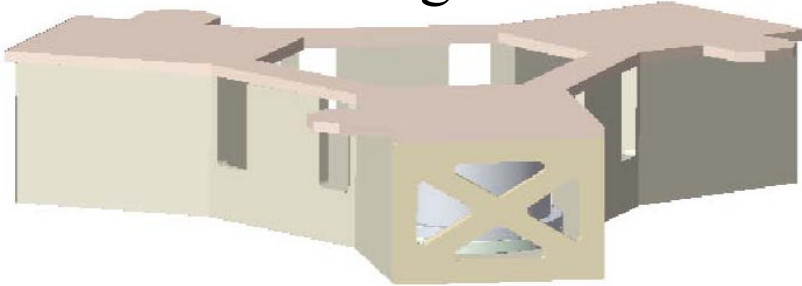


stage 1 and stage 2

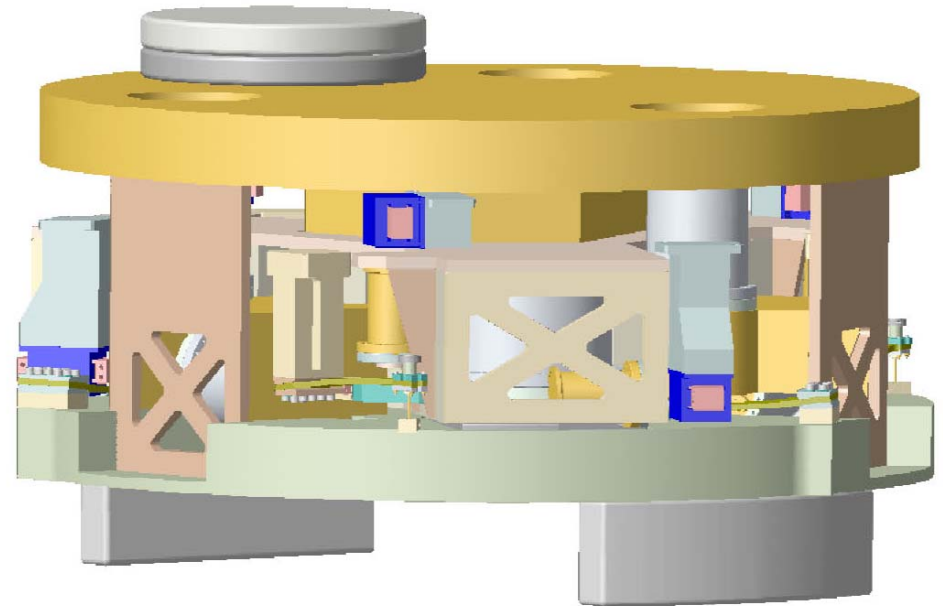
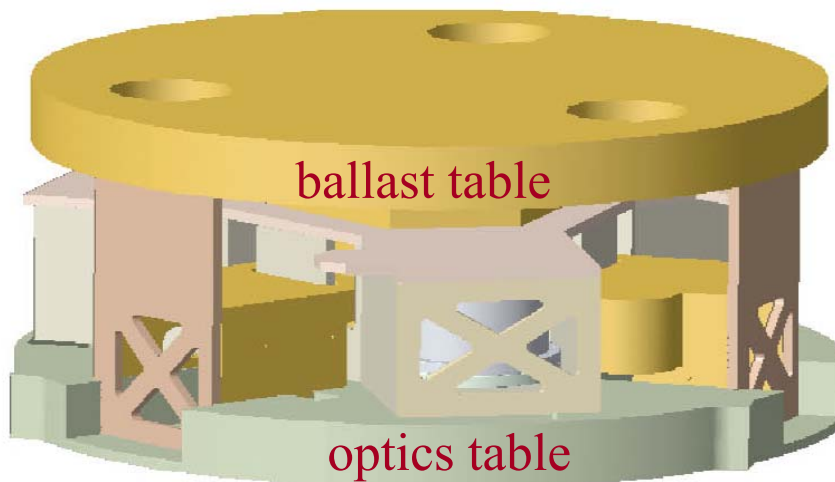


# LASTI Prototype Plant

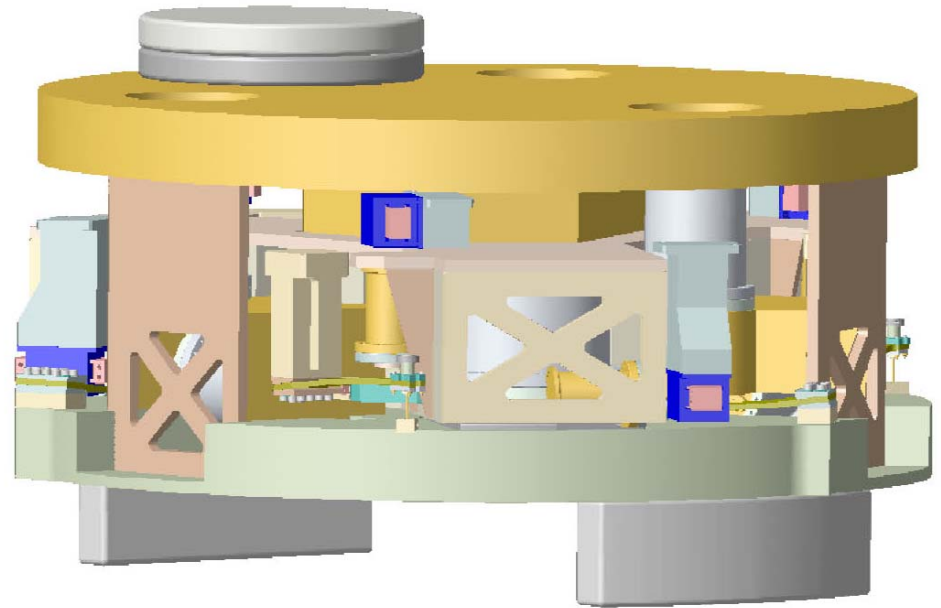
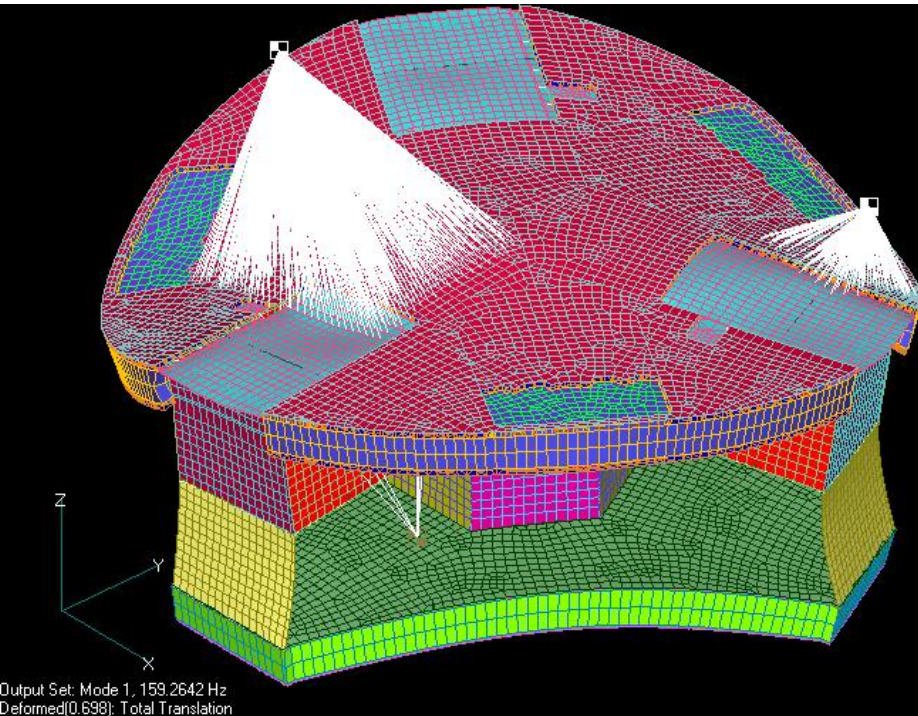
stage 1



stage 1 and stage 2

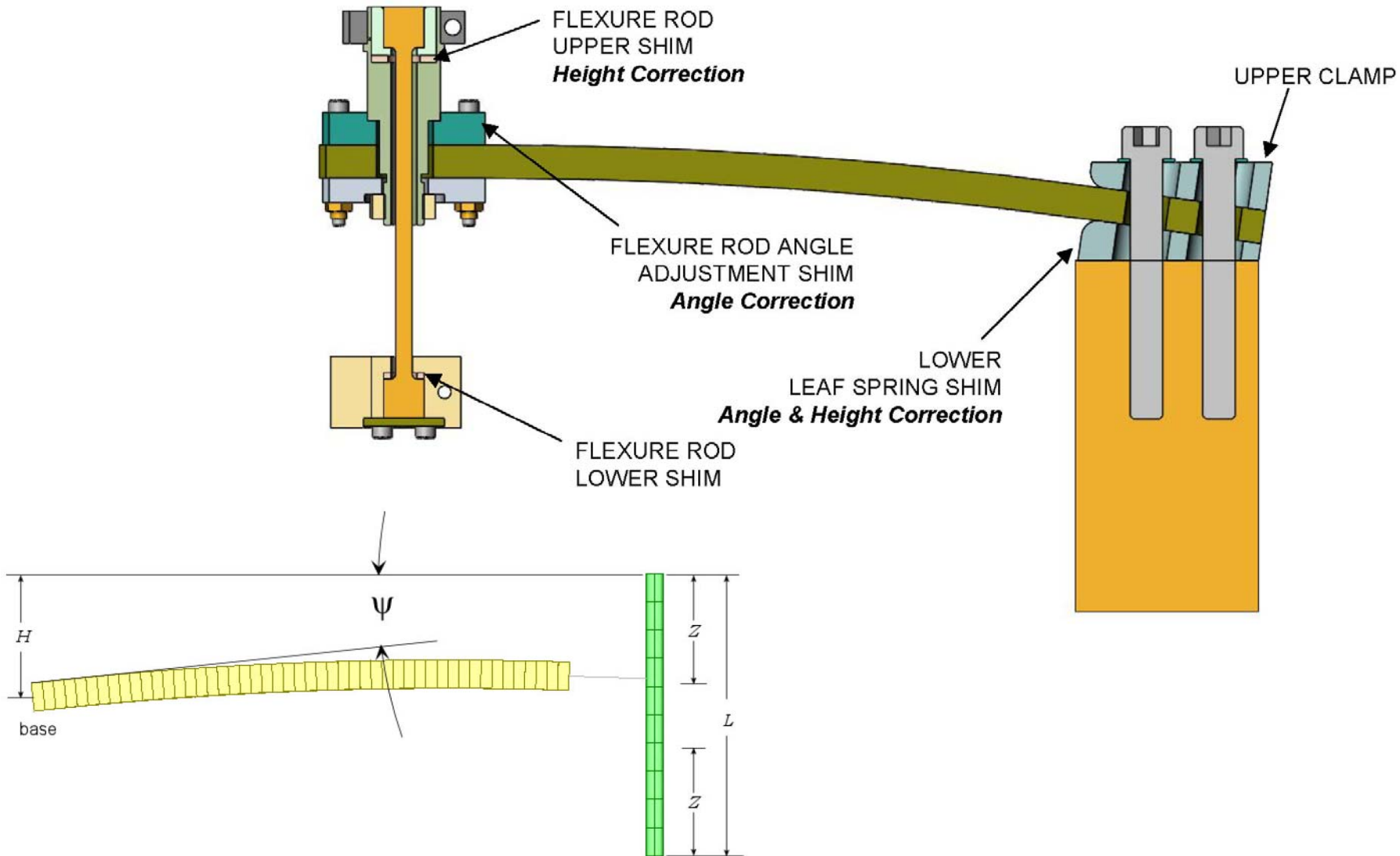


# LASTI Prototype Plant



modal analysis with reasonable models  
of sample payloads look good

# Spring redesign





# The Plan...

External Pre-Isolator commissioning goes forward

Internal two-stage prototype coming together

- Control development should make great progress over the next 6 months.
- Sensors and Actuators making progress.
- Mechanical Design going forward very quickly.

BSC review ~ April 20

HAM review ~ May 5

- Delivery to LASTI end of October 2004