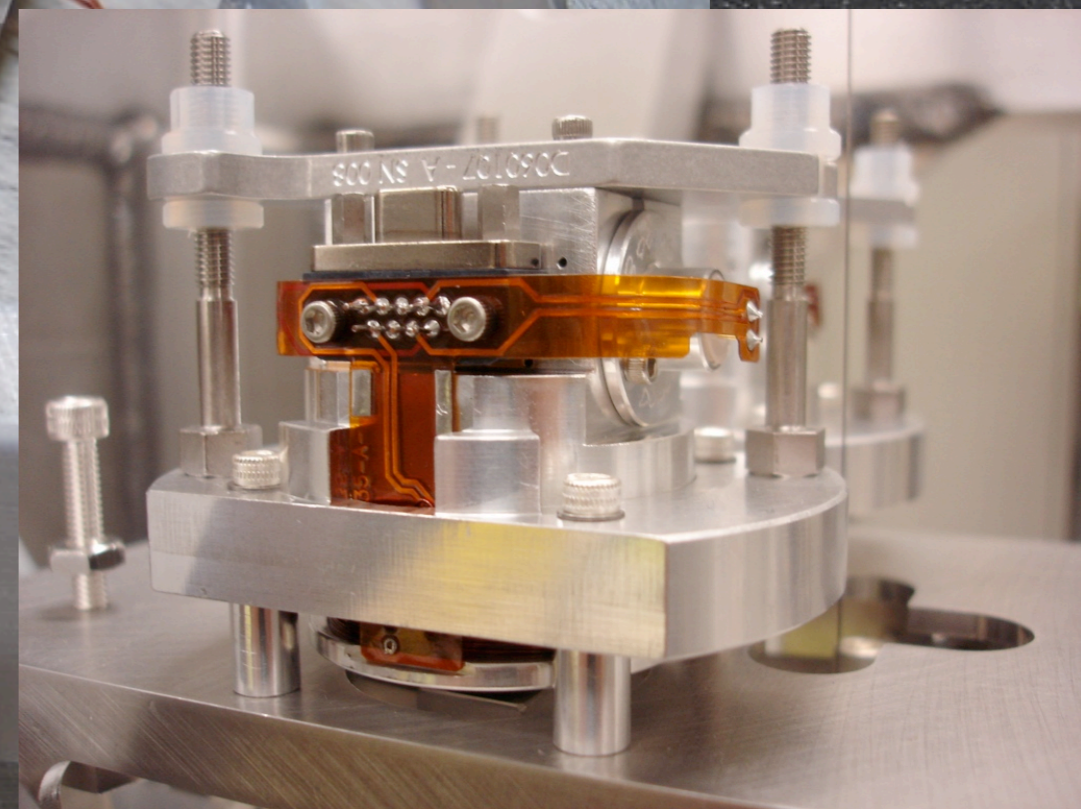
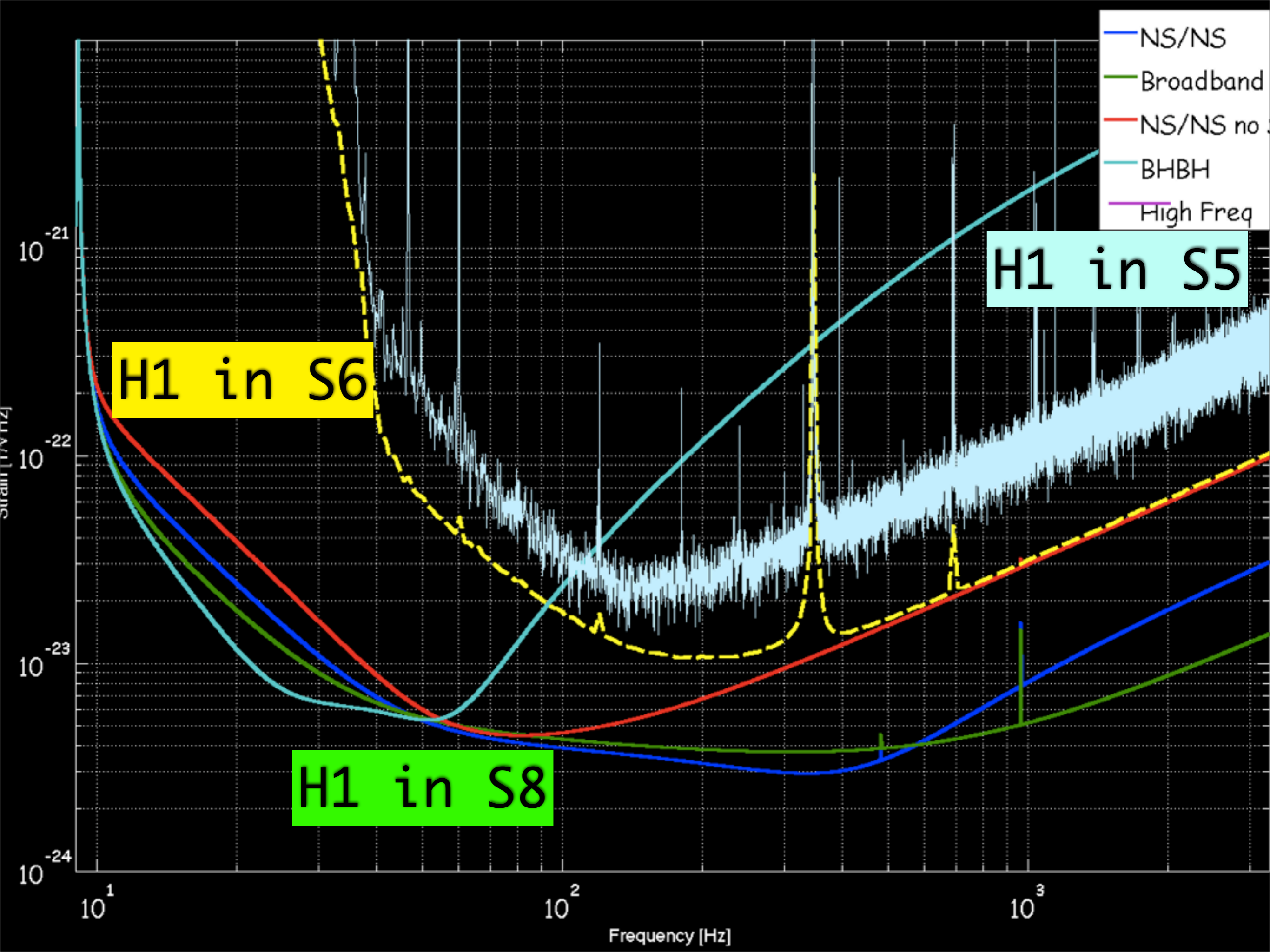


Enhanced LIGO

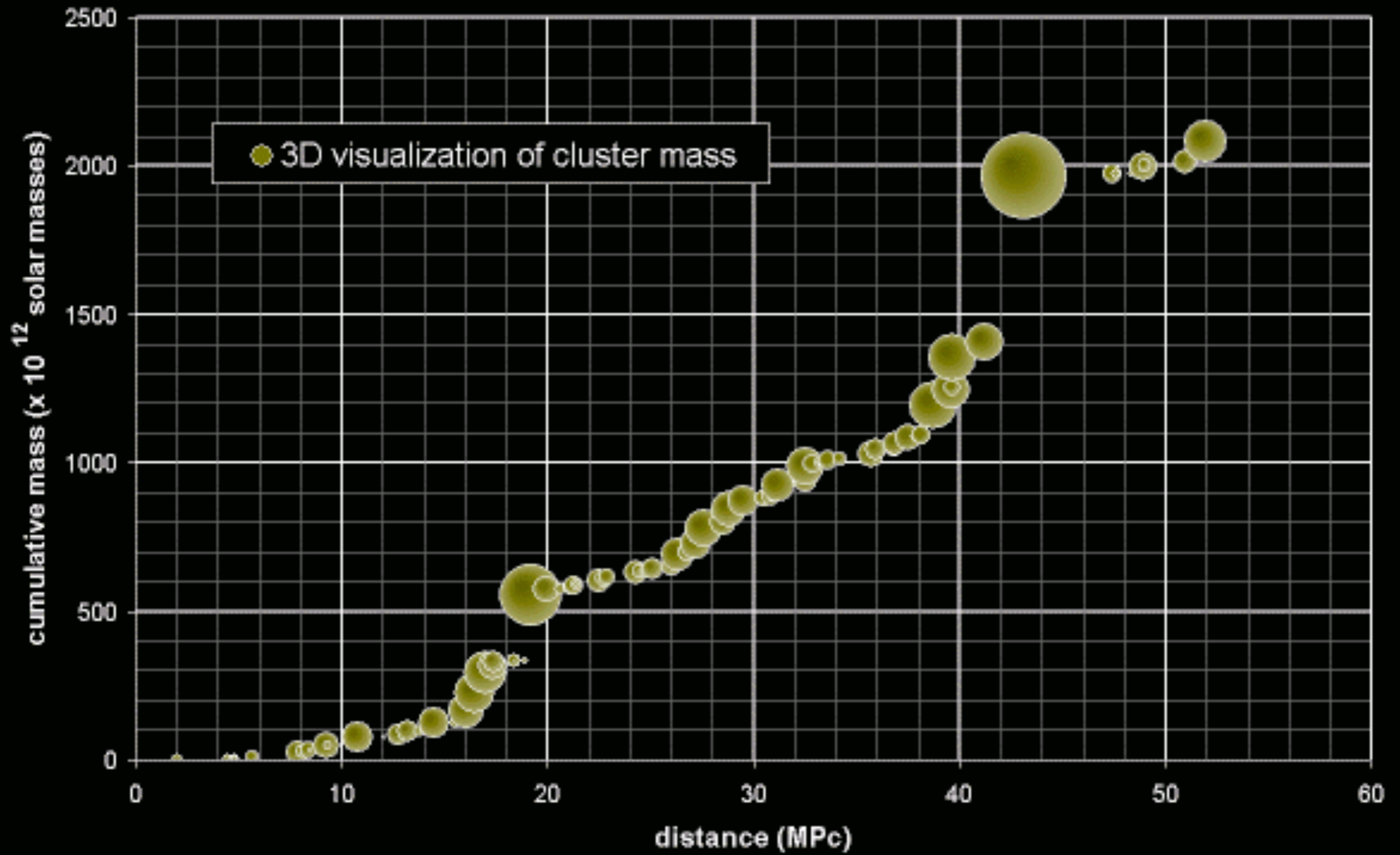


Rana Adhikari
LSC Meeting
Pasadena
March 2008





Nearby mass distribution in the Universe



Outlook

- Installation complete in ~4 months
 - HAM, OMC, 35 W Laser, EOM, TCS, Baffles, Magnets
- Commissioning until ~January
- Science running / Commissioning ramp
- Stop for Advanced LIGO in 2011

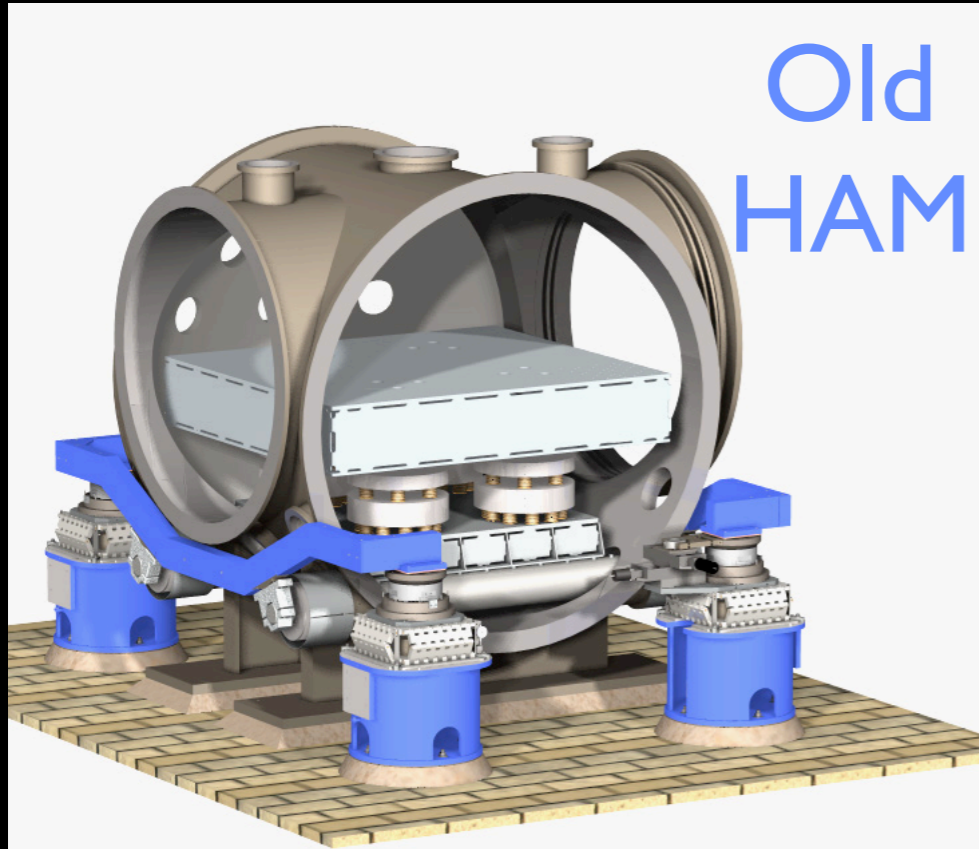
What it is

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- More power (lowering the shot noise)
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 - New TCS to handle the distortion
 - Cleaning the mirrors
- Misc
 - Magnets, Electronics, light power, controls...

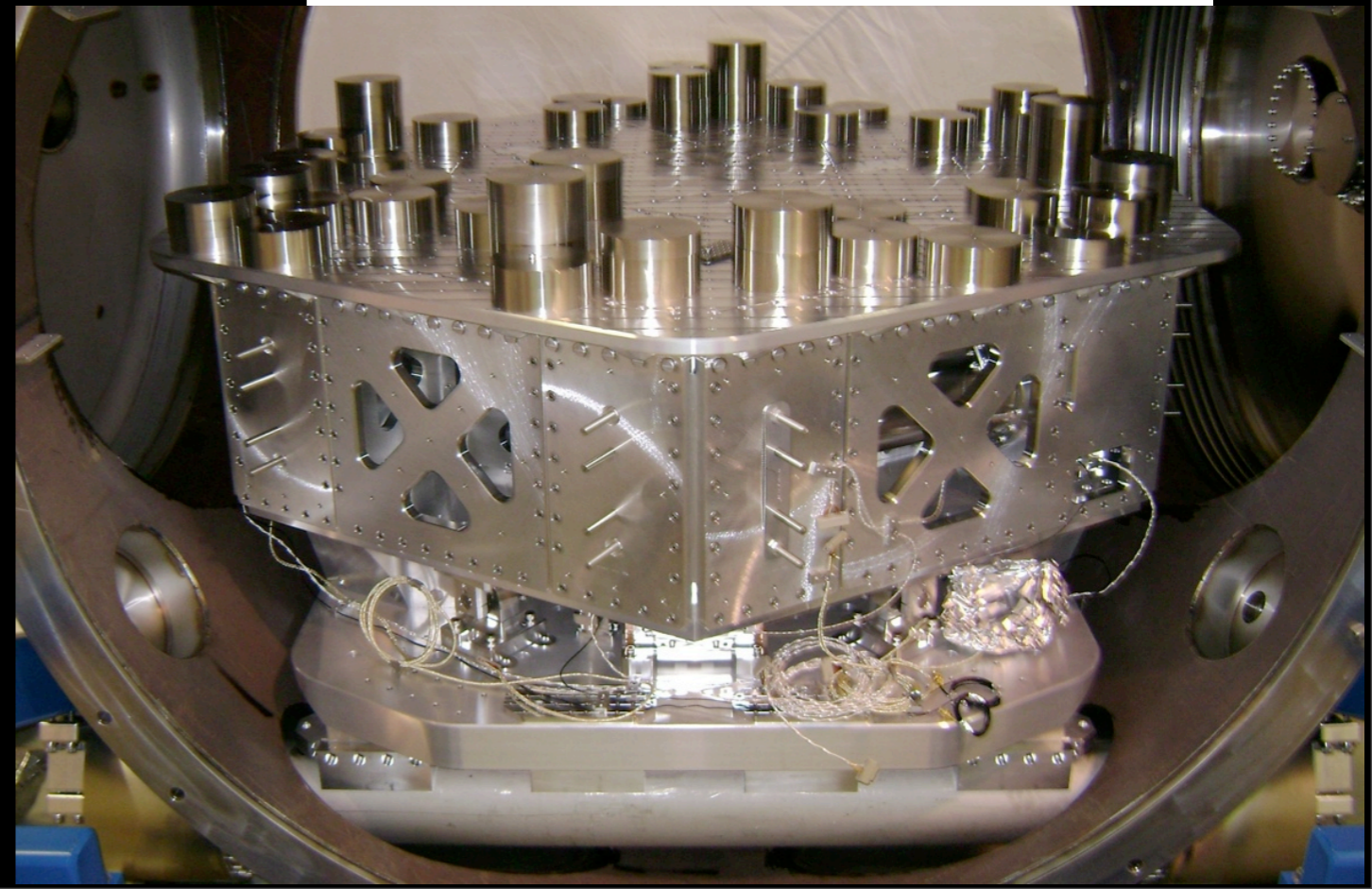
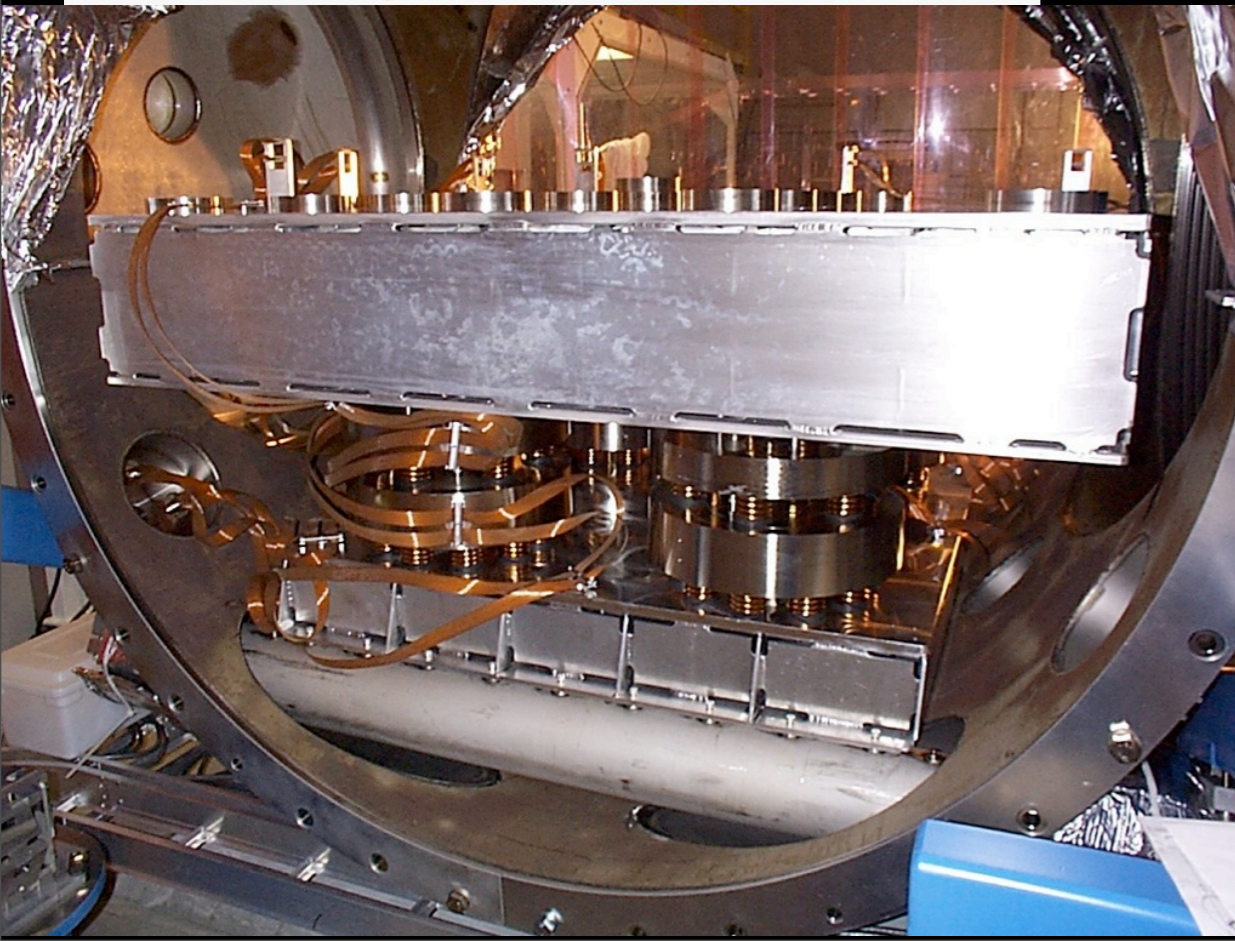
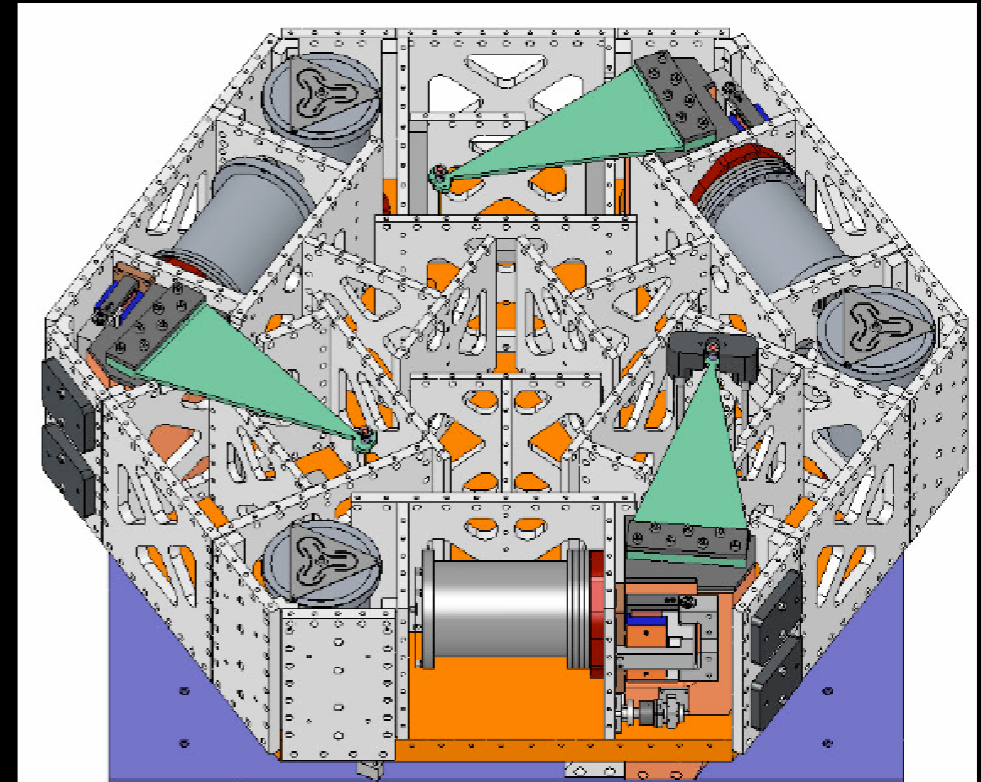


HAMs

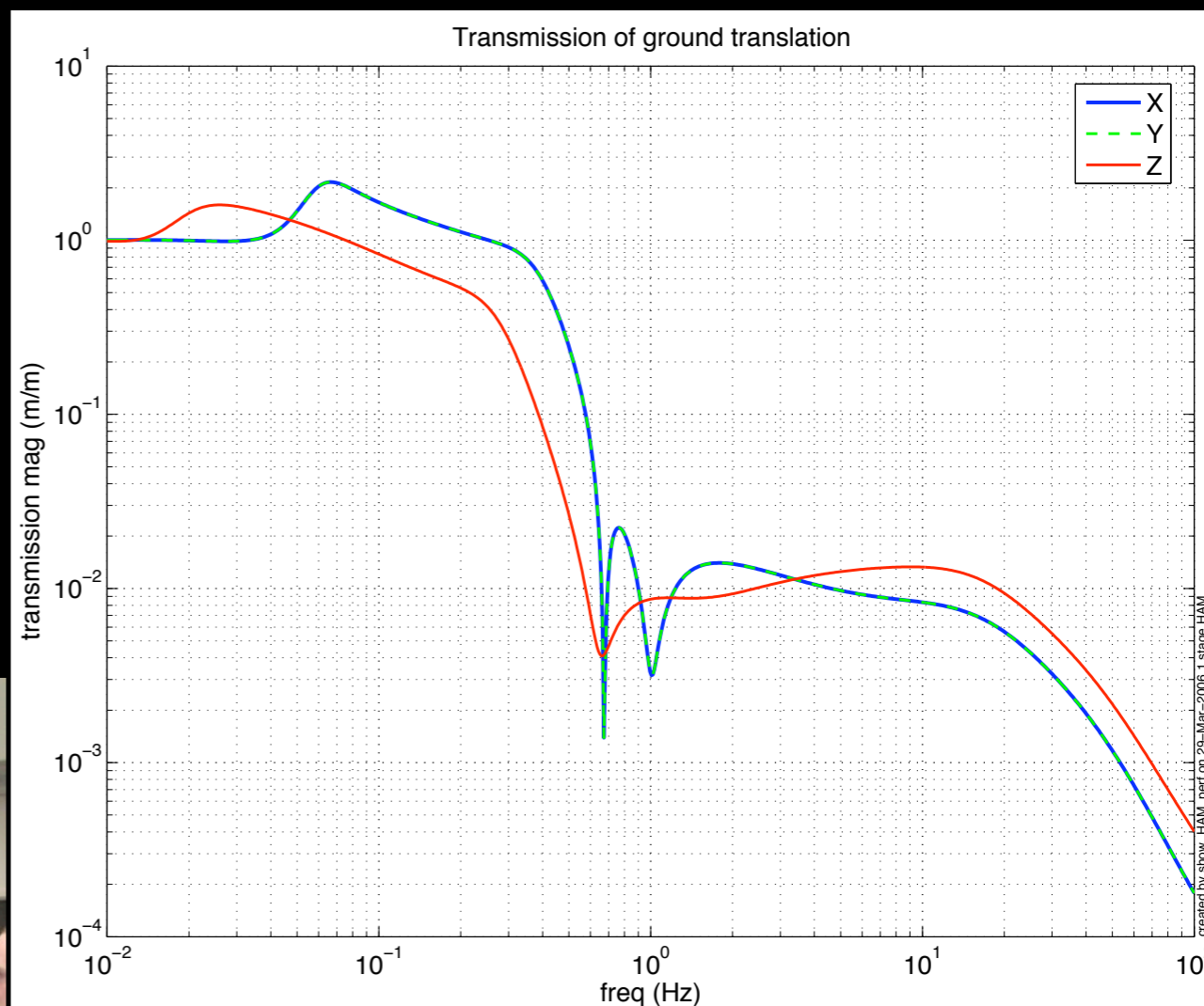
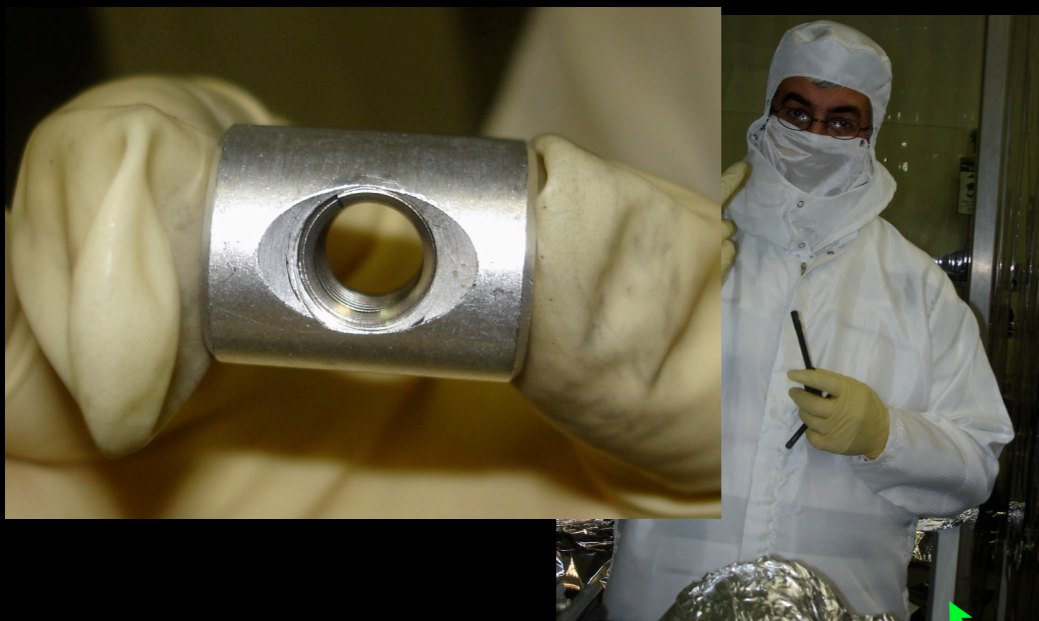
Old
HAM



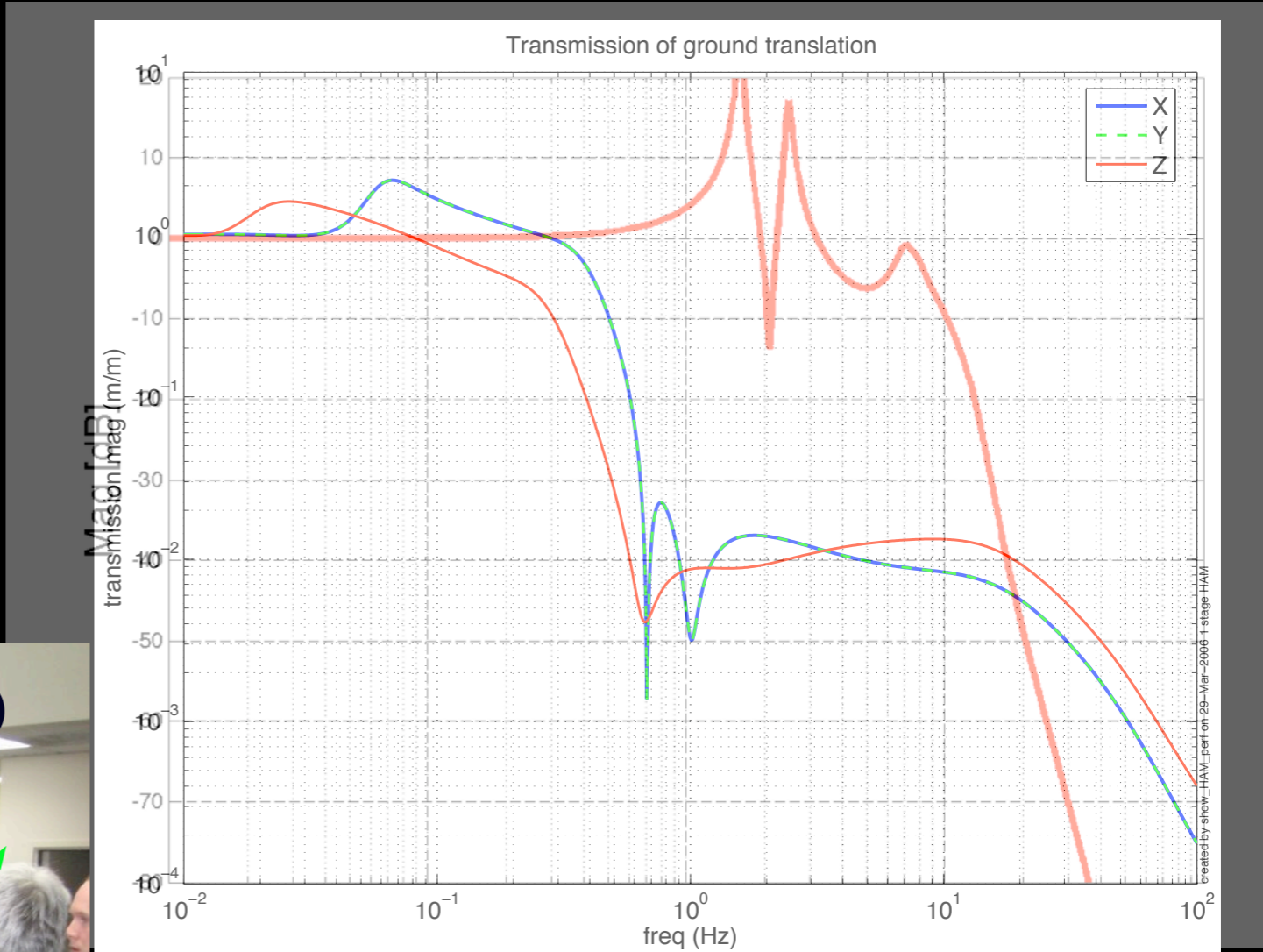
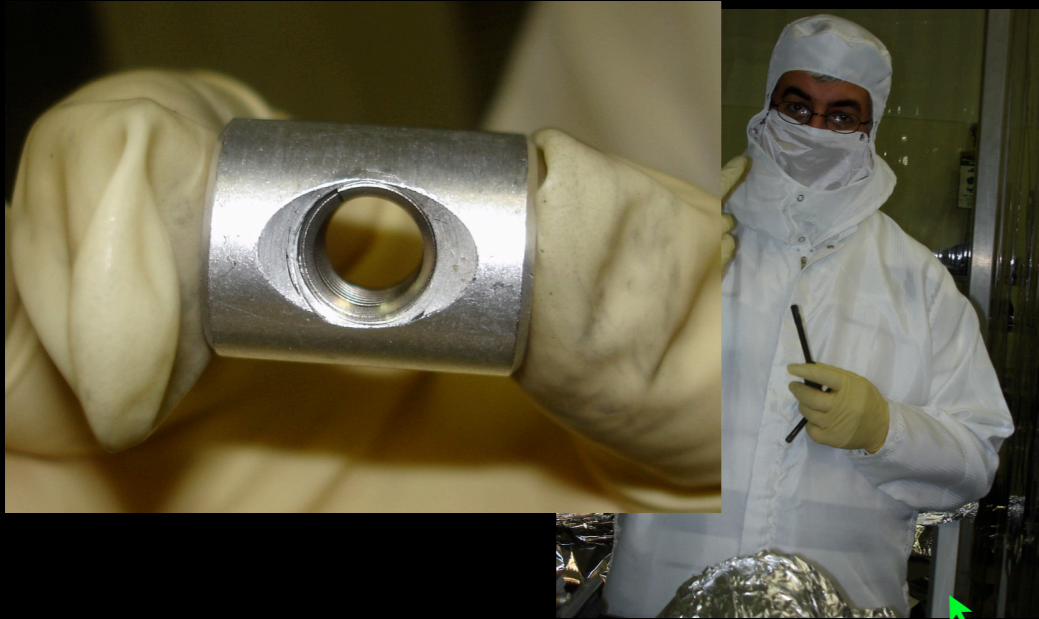
New HAM



HAM Performance

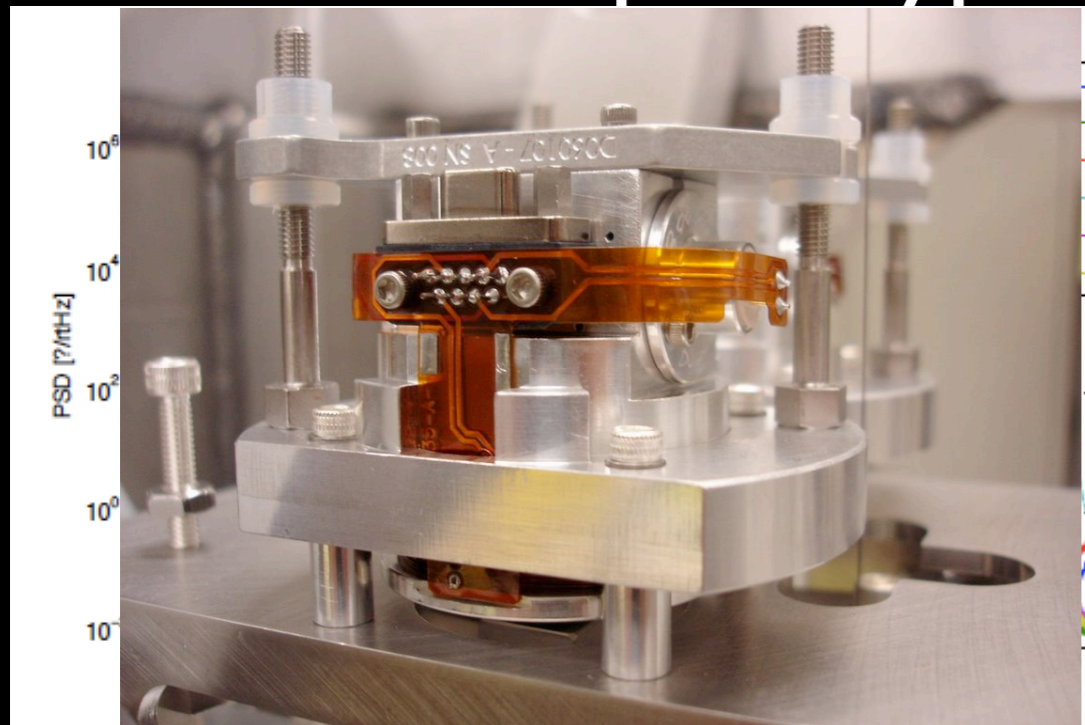
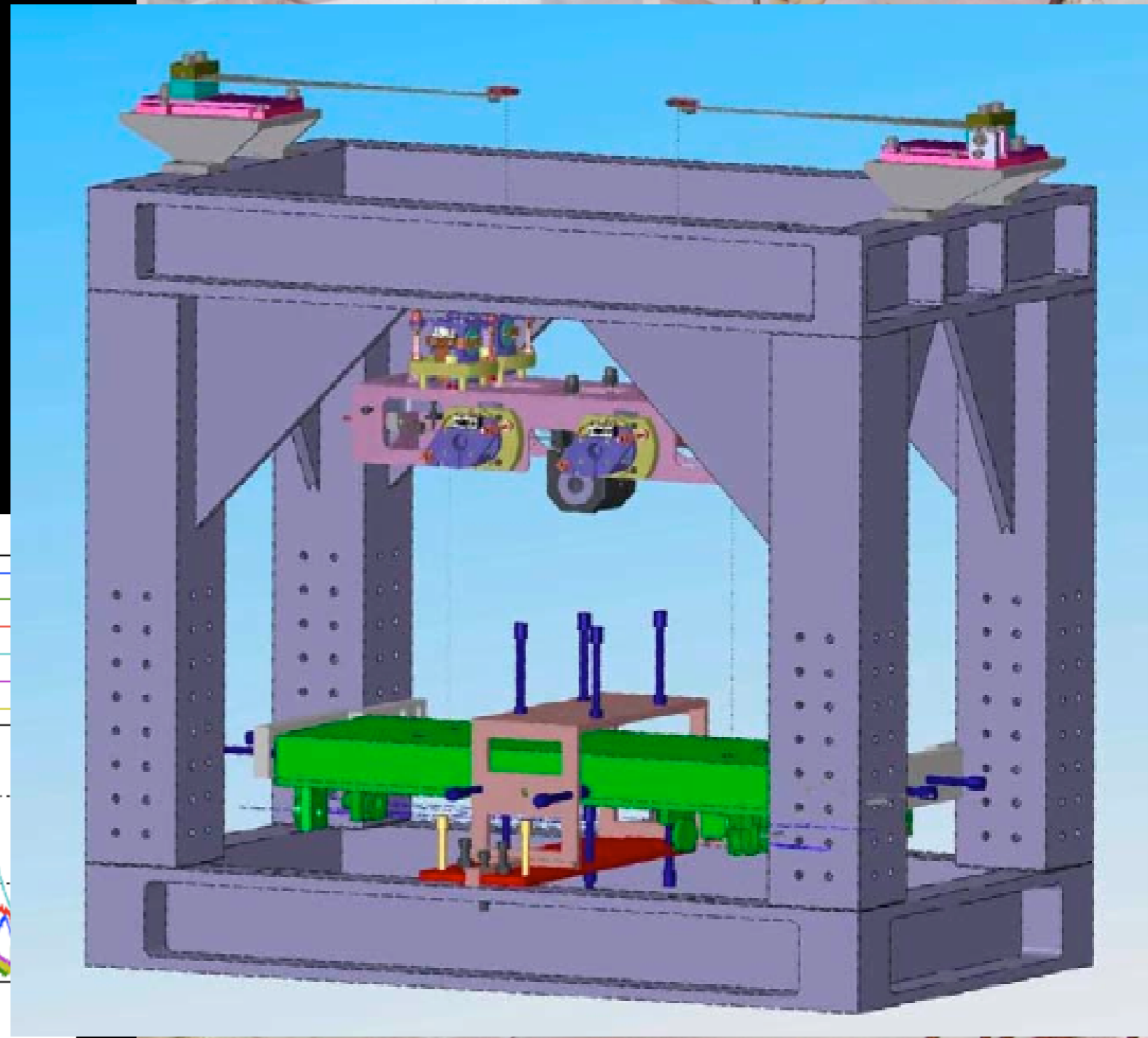


HAM Performance



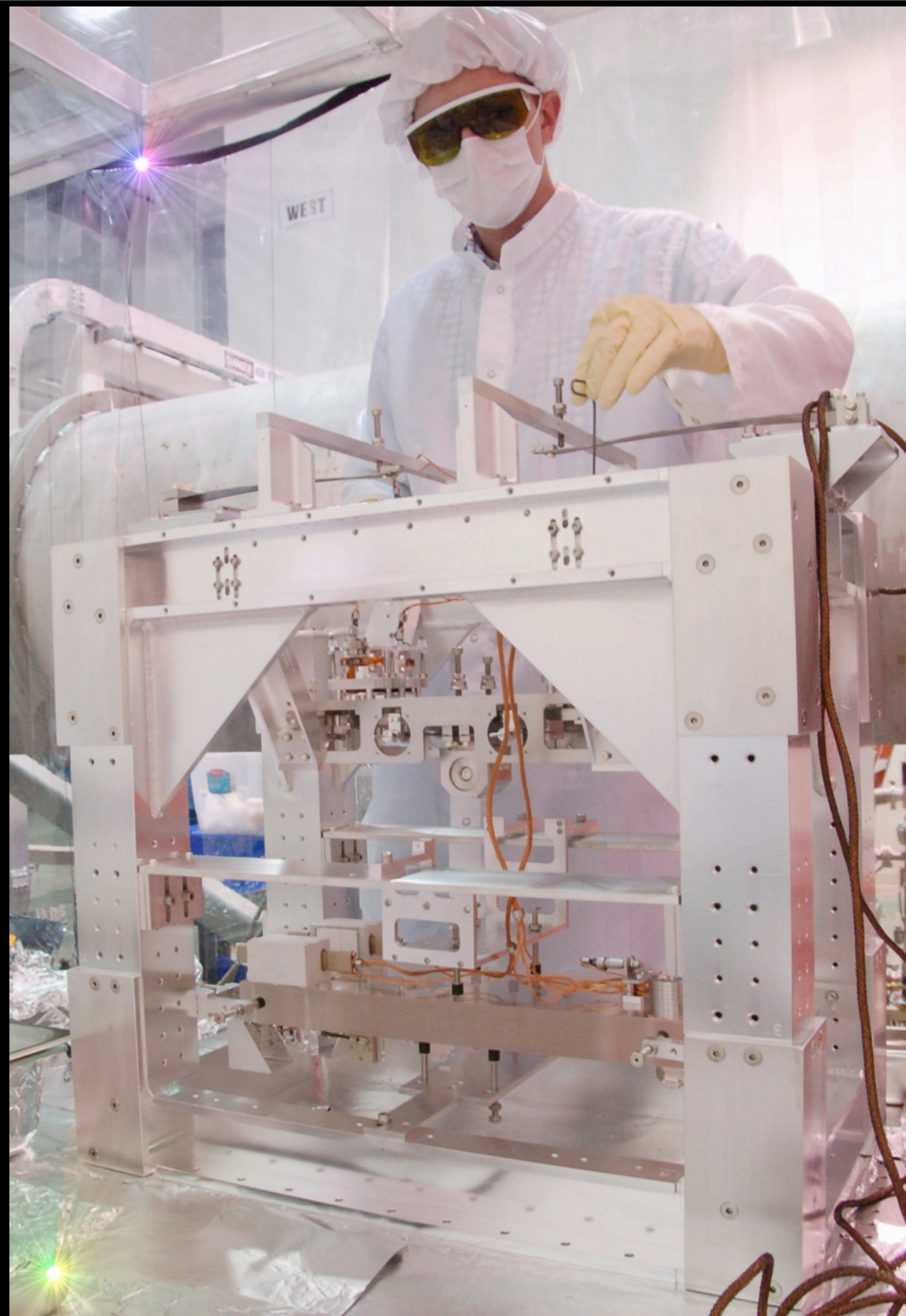
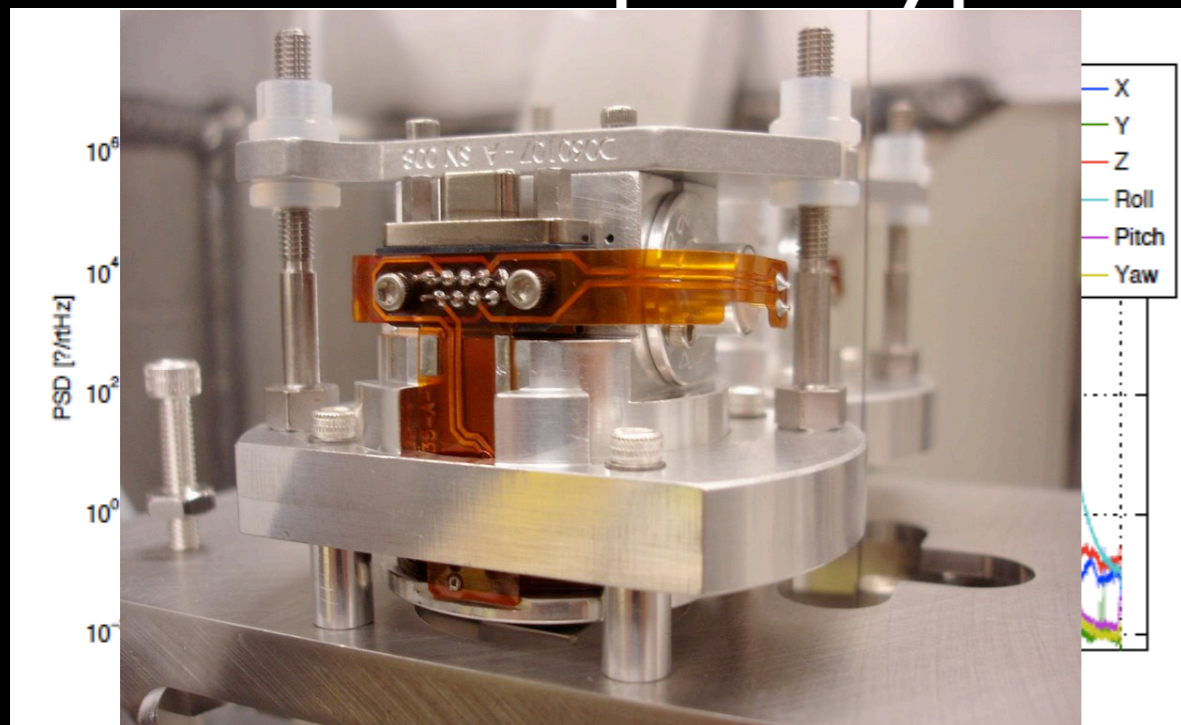
OMC Suspension

- Double Pendulum
 - Welded Aluminum
 - B'OSEMs
 - Blades
- AdvLIGO prototype



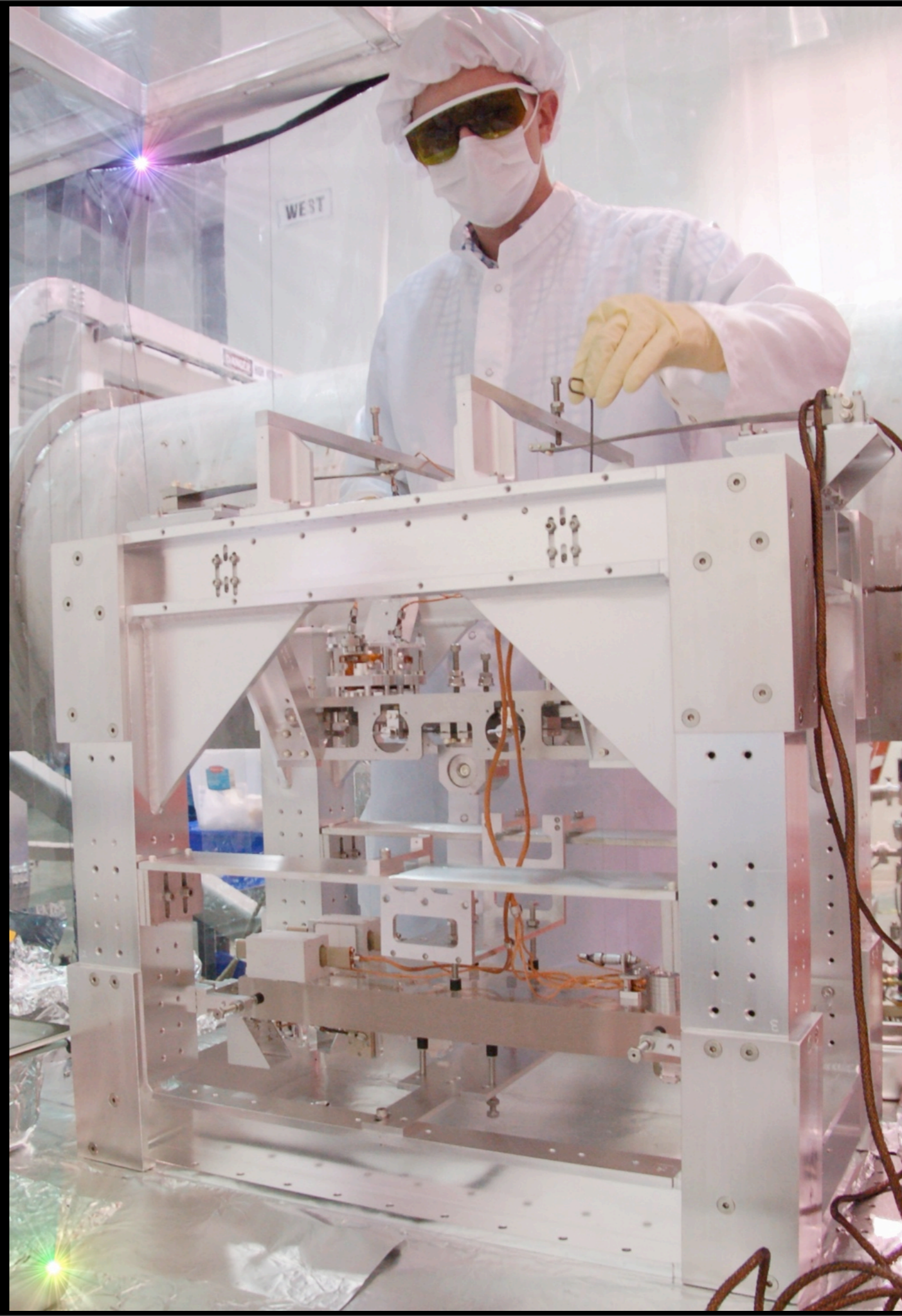
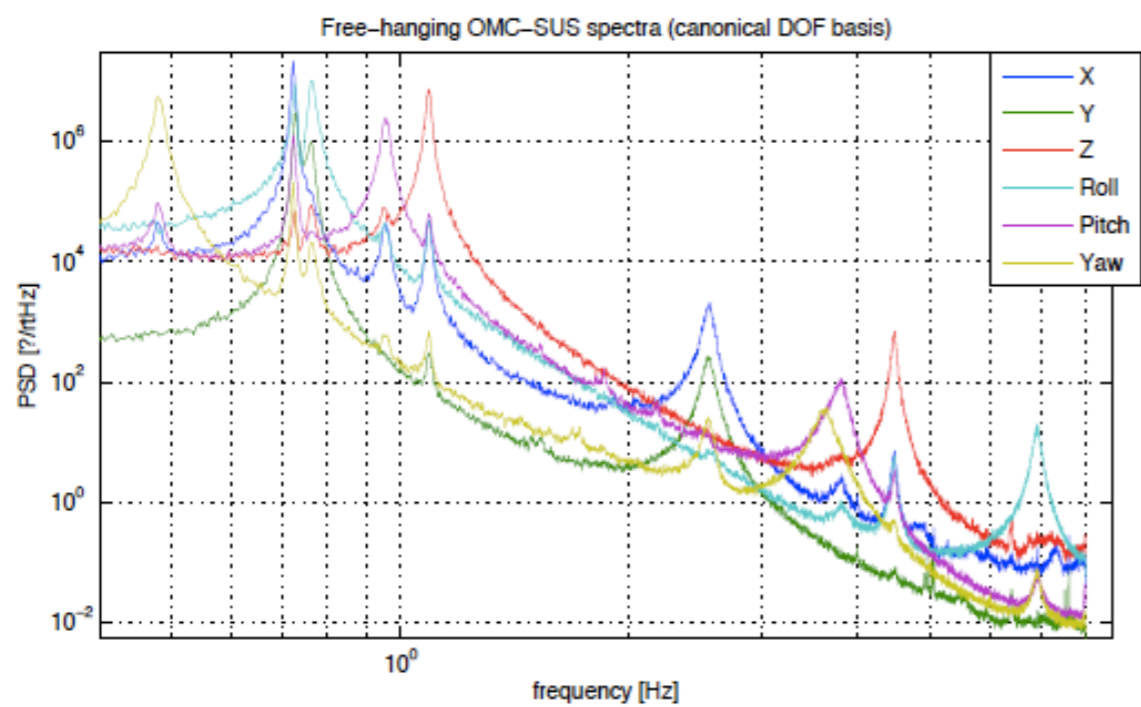
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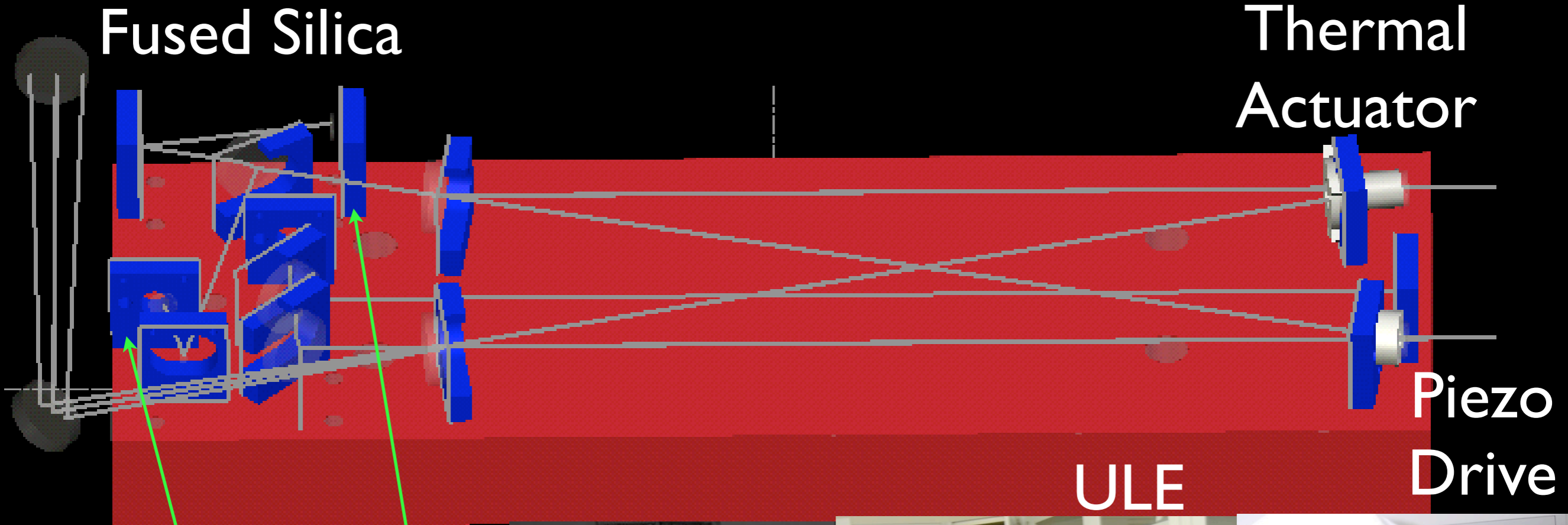


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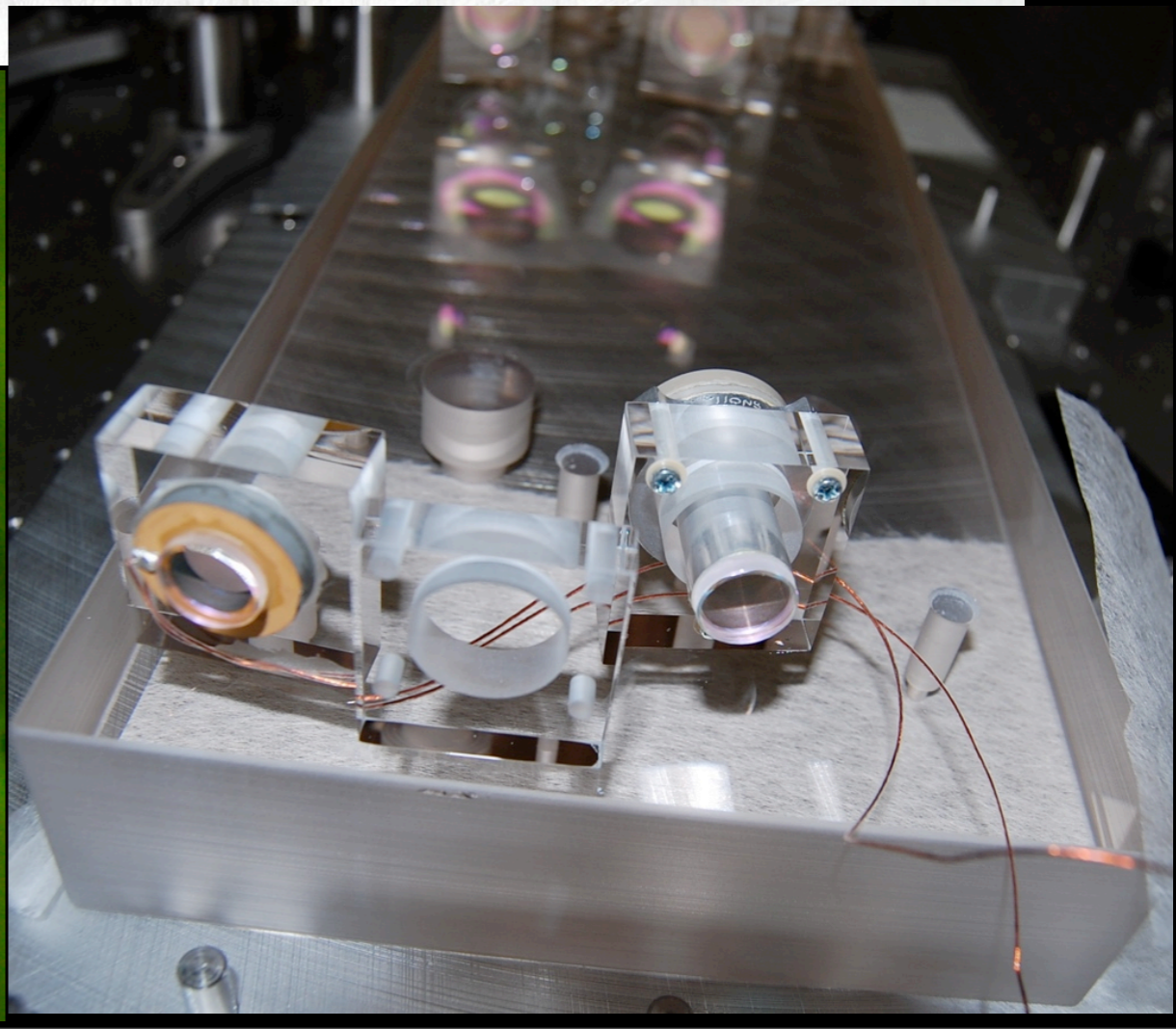
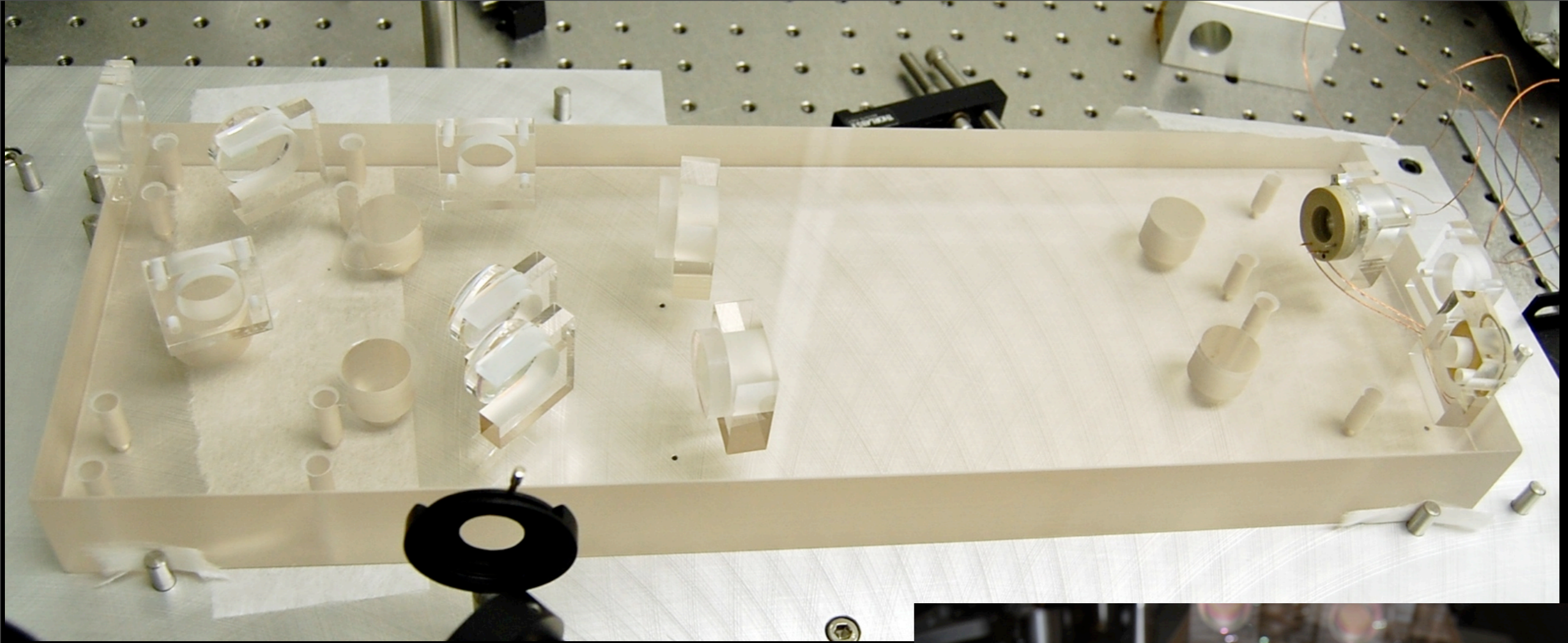


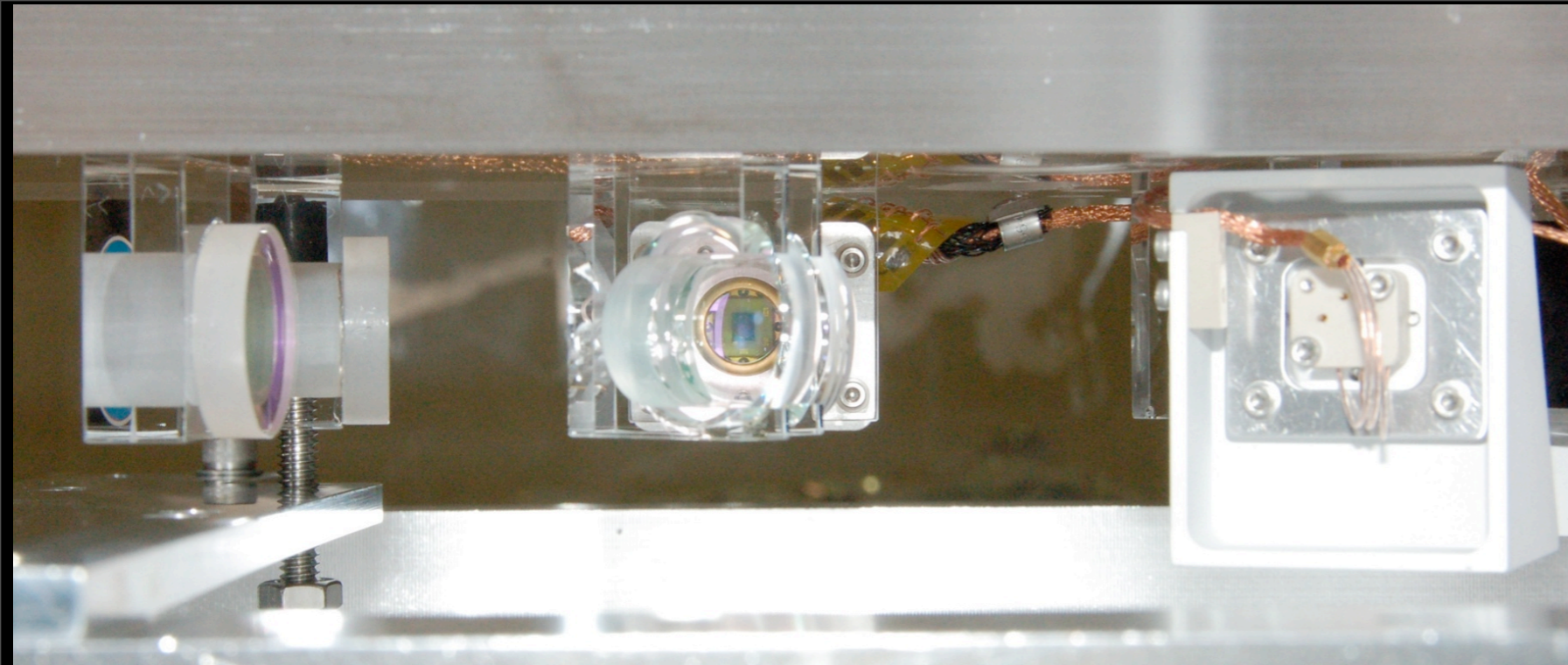
OMC



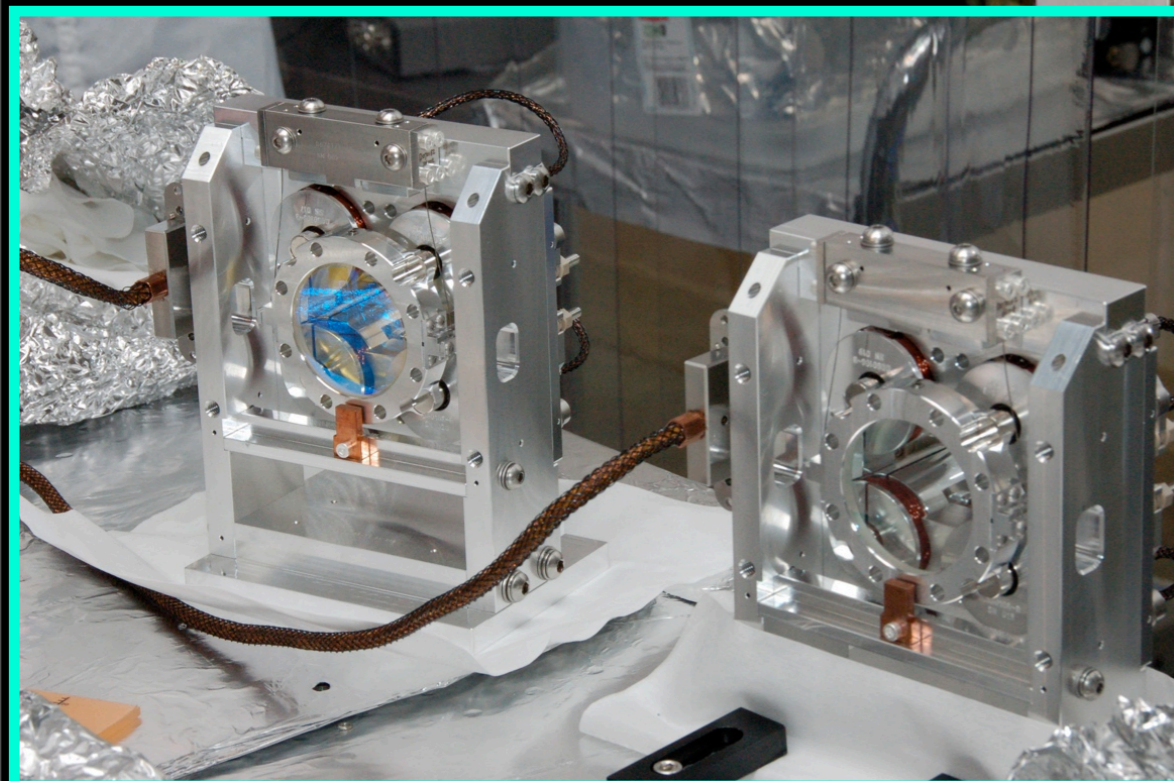
DC
Detectors
(no more AS_Q !!)

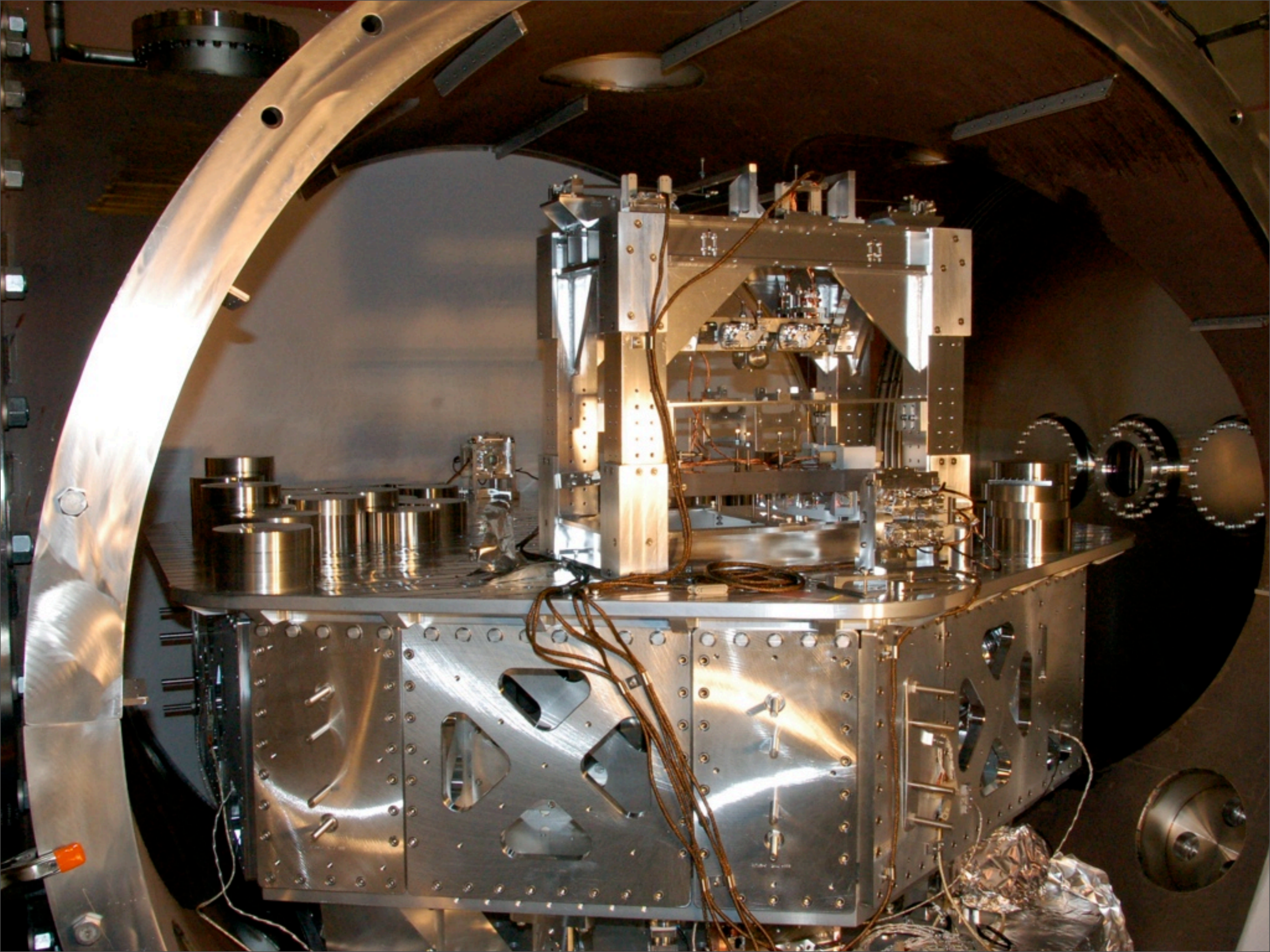






Active Beam Steering
+ Detector Protector

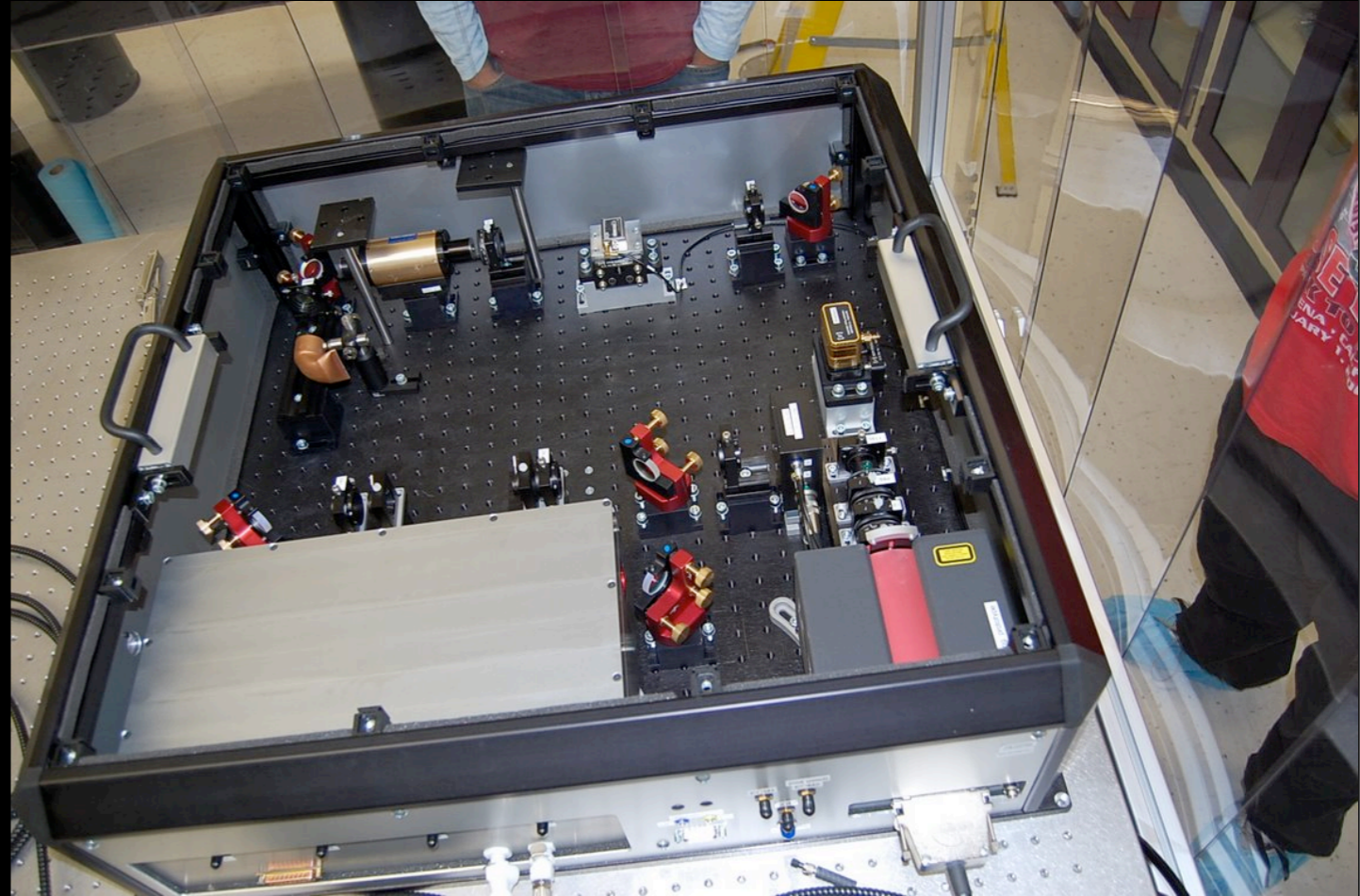
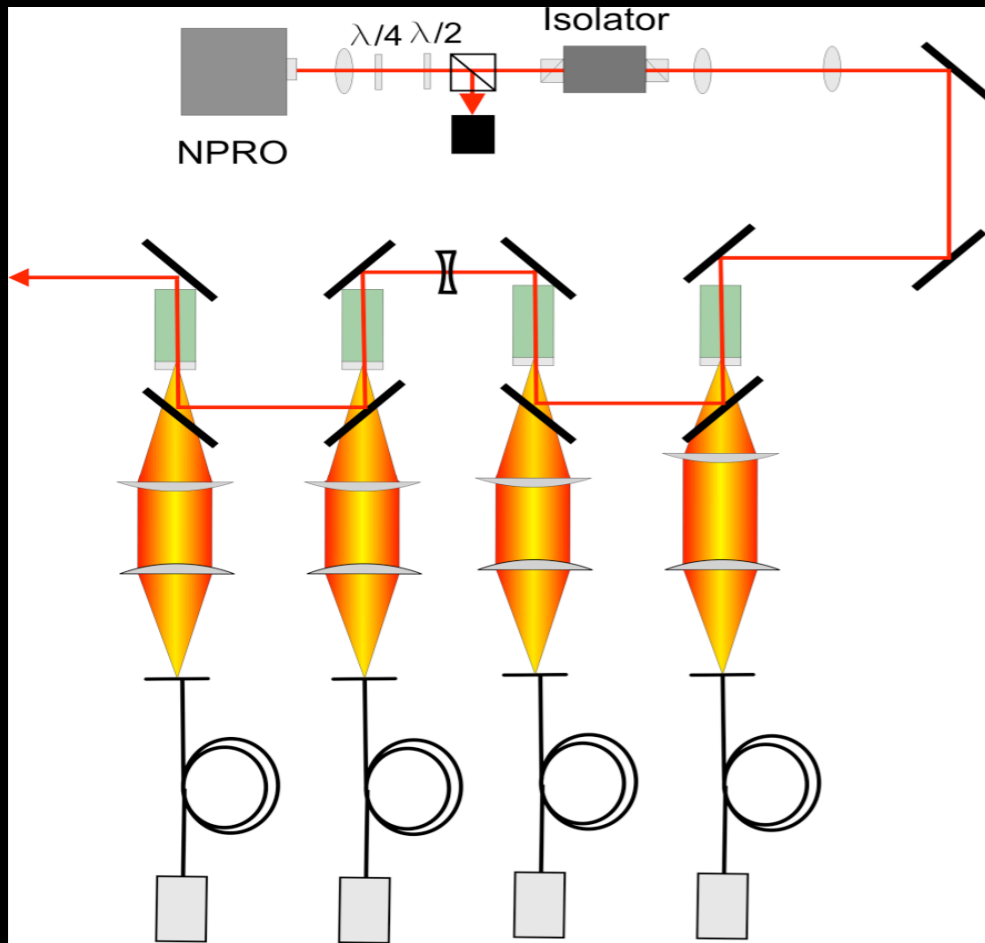




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More Laser Power



- 10W \rightarrow 35 W
- Lasers from LZH/AEI
- Pump power via fiber coupled diodes
- AOM for ISS

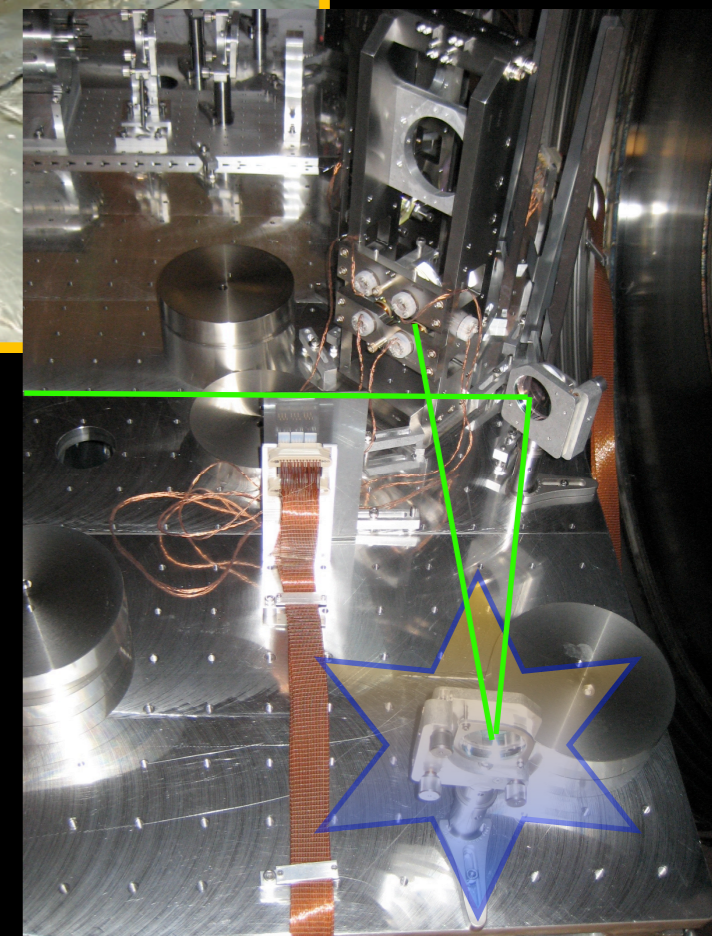
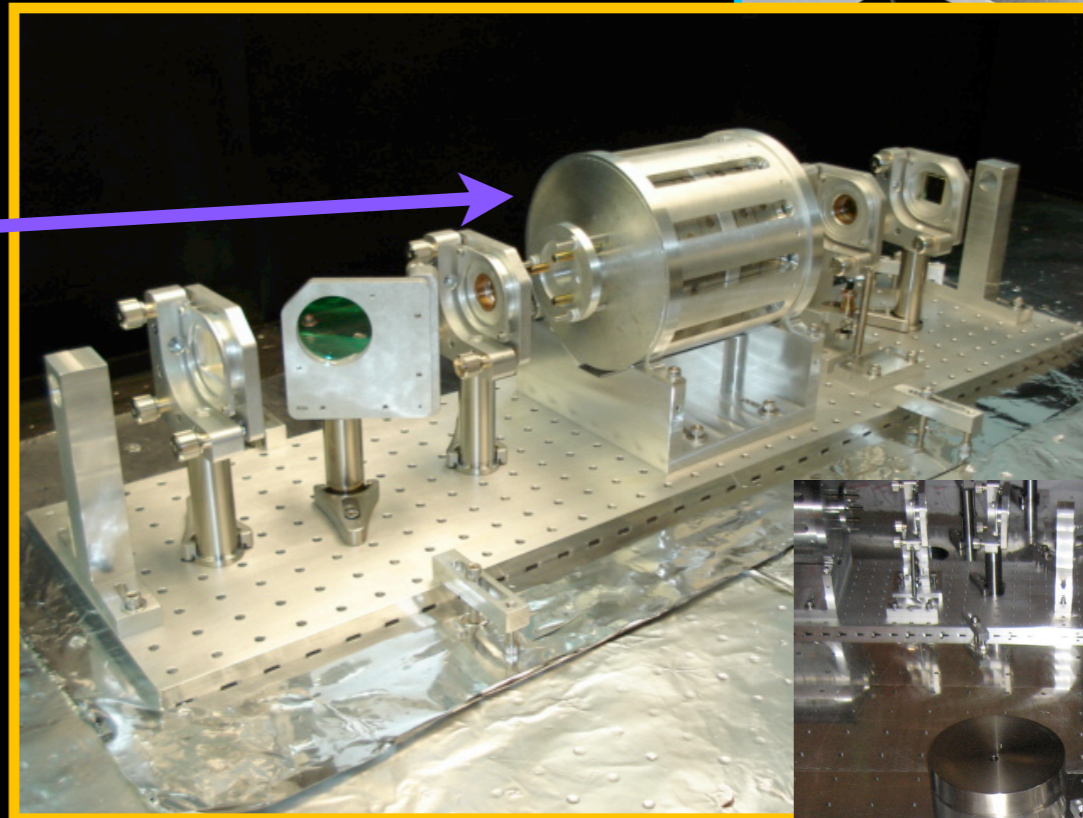
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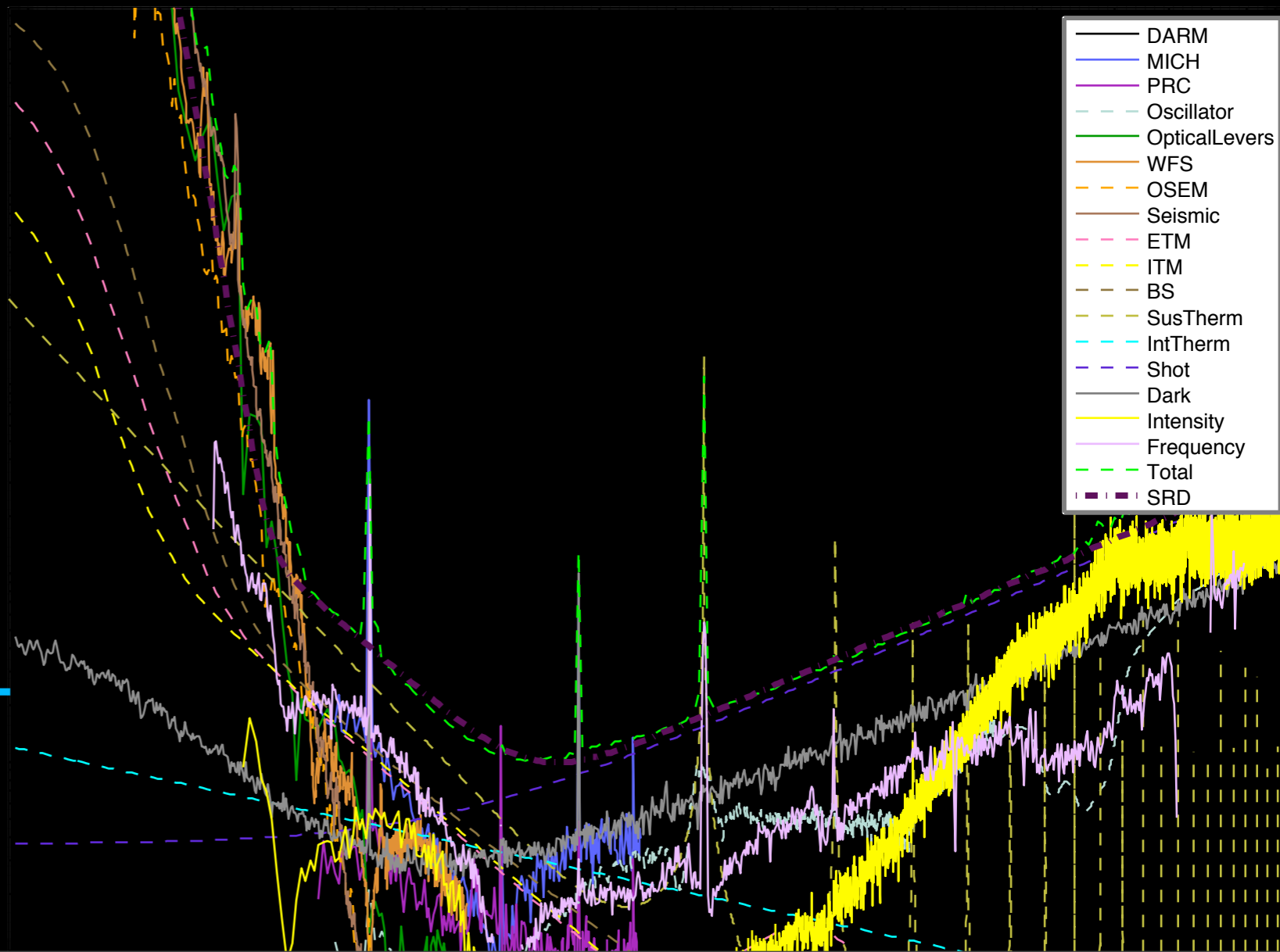
Input Optics

- High Power, TriMod, Phase Modulator
- High Power Faraday Isolator
- Replace bad steering mirror
- Wiped MC Mirrors
- Mode Matching...



ETM Magnet Swap

- Main Upconversion
- Observed in lab
- 40 - 100 Hz band
- Remove & Rework ETMs (un-glue)
- NdFeB -> SmCo
- Re-install ETMs
- HI (immediately) + LI (June)



What Next

- Laser Install @ LHO Next
 - EOM / PSL Table / TCS
- DC Readout Commissioning
 - HAM--LLO:Test, LHO:Full Controls
 - OMC -- LLO:Now, LHO:April
- Other
 - Angular Instabilities
 - High Power TCS Tuning

S6 - S7

- S5: 2 years of Owl Shifts
- A ~few commissioning breaks/sprints
- S6 does not have to be monolithic
- ~2-3 distinct Science Runs [2009 - 2011]

