Summary
FD Support System

Andrea Jeremy: FD Support

Tatsuya Kume: Shintake Monitor

David Urner: MONALISA

FD support

Andrea JEREMIE

N.Geffroy, B.Bolzon, G.Gaillard

SUMMARY: Vibrations transmissibility study

✓ **First eigenfrequency measured:**

- **With no masses: 74Hz (Q=12)**
- **Masses of 1400Kg: 46Hz (Q=9)**

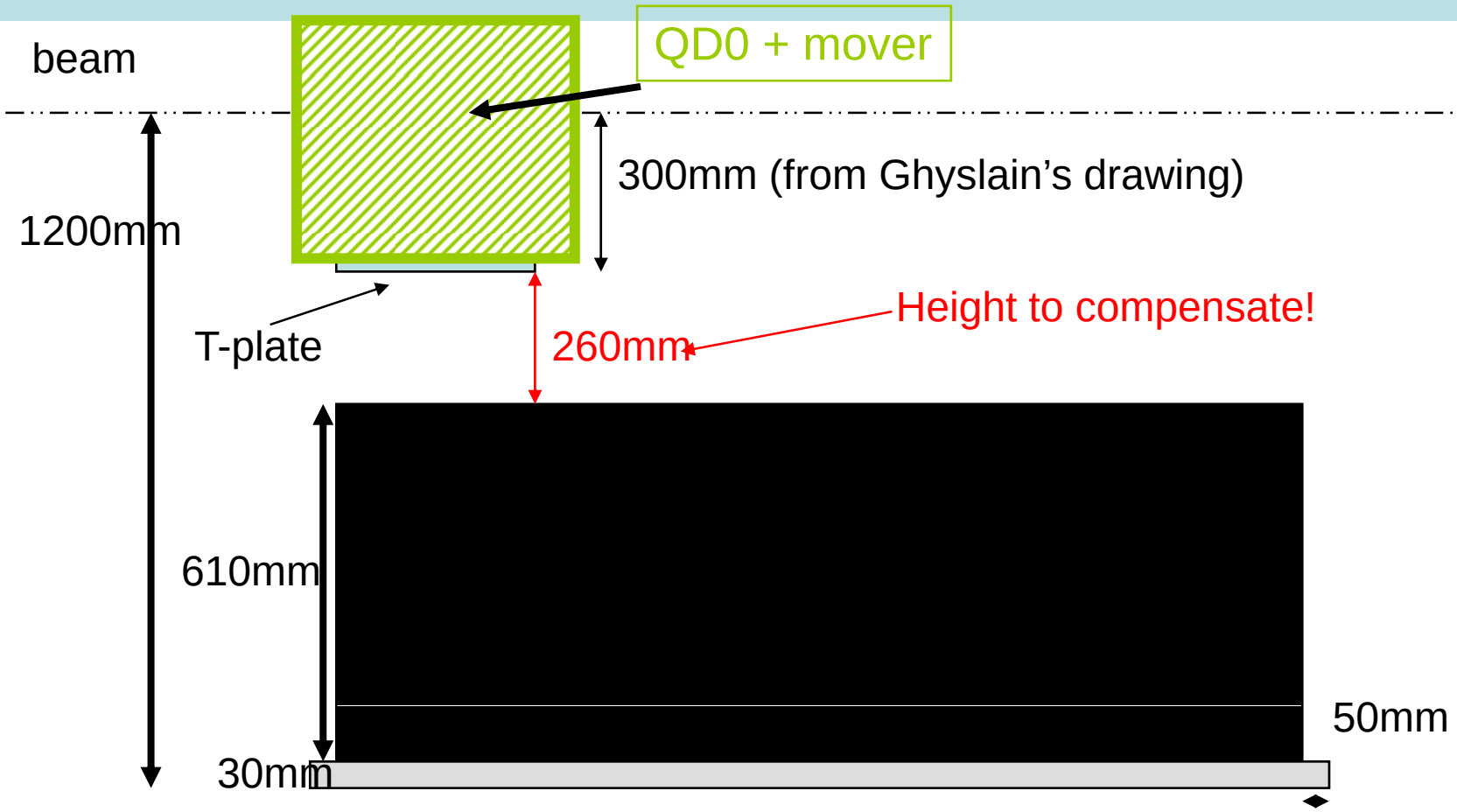
✓ **First eigenfrequency simulated:**

- With no masses: 56Hz
- Masses of 1400Kg: 26Hz

➔ **Simulations done: gives a good idea of eigenfrequency evolution with masses and boundary conditions**

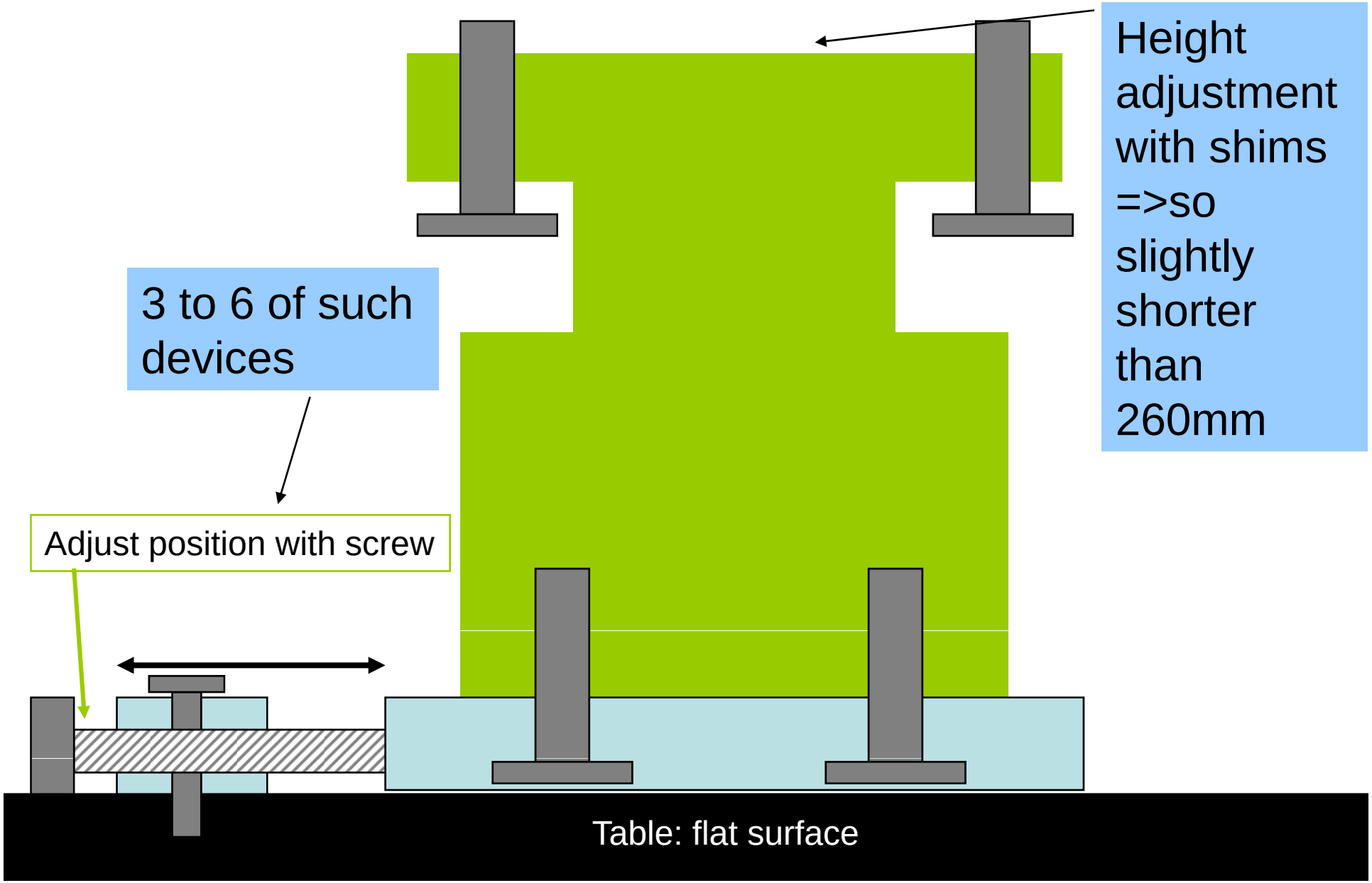
✓ **Other table transfer function peaks: Due to the fact that supports are not fixed to the table and to the ground**

Current QD0 configuration

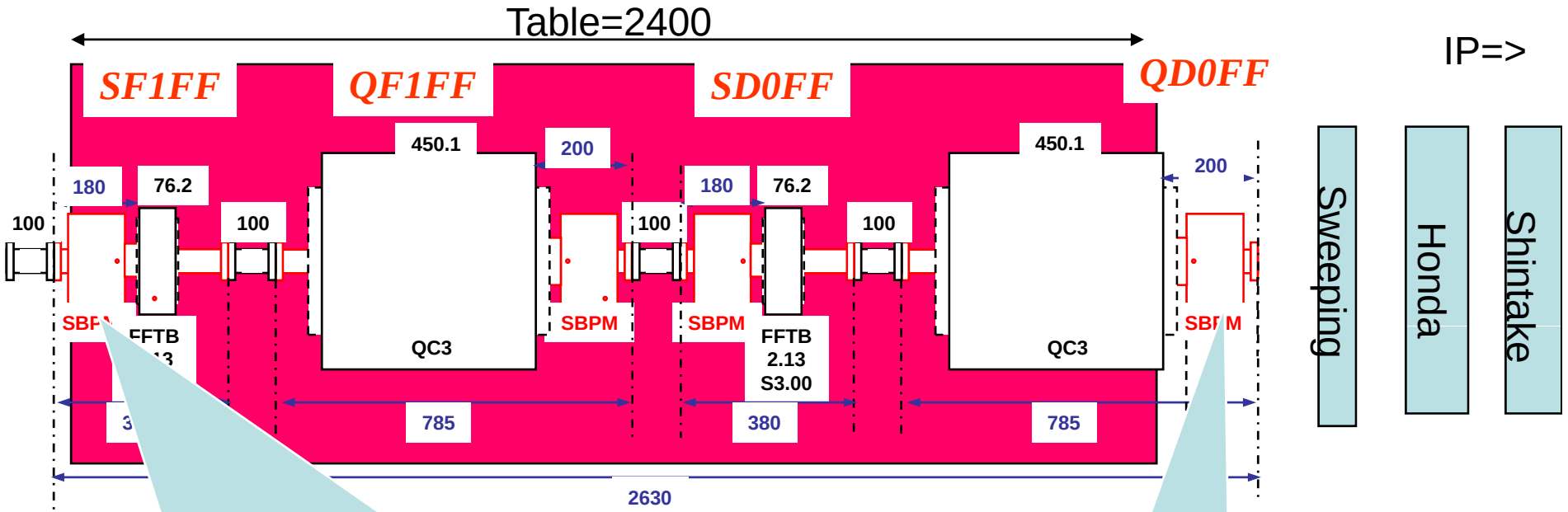


Idea for 260mm support is to have a bottom plate clamped to the bloc with some possibility of adjusting the position with big screws

Position adjustment



FD configuration (T.Okugi's presentation)



S-band BPM slightly outside table on a "light" Sextupole=> how will the S-band BPM be supported?

Does this BPM need to be supported?

Mount stabilization for Shintake monitor-6

5th ATF2 Project meeting December 20, 2007

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High Energy Accelerator Research Organization (KEK)

T. Suehara, H. Yoda, M. Oroku, T. Yamanaka and Y. Kamiya

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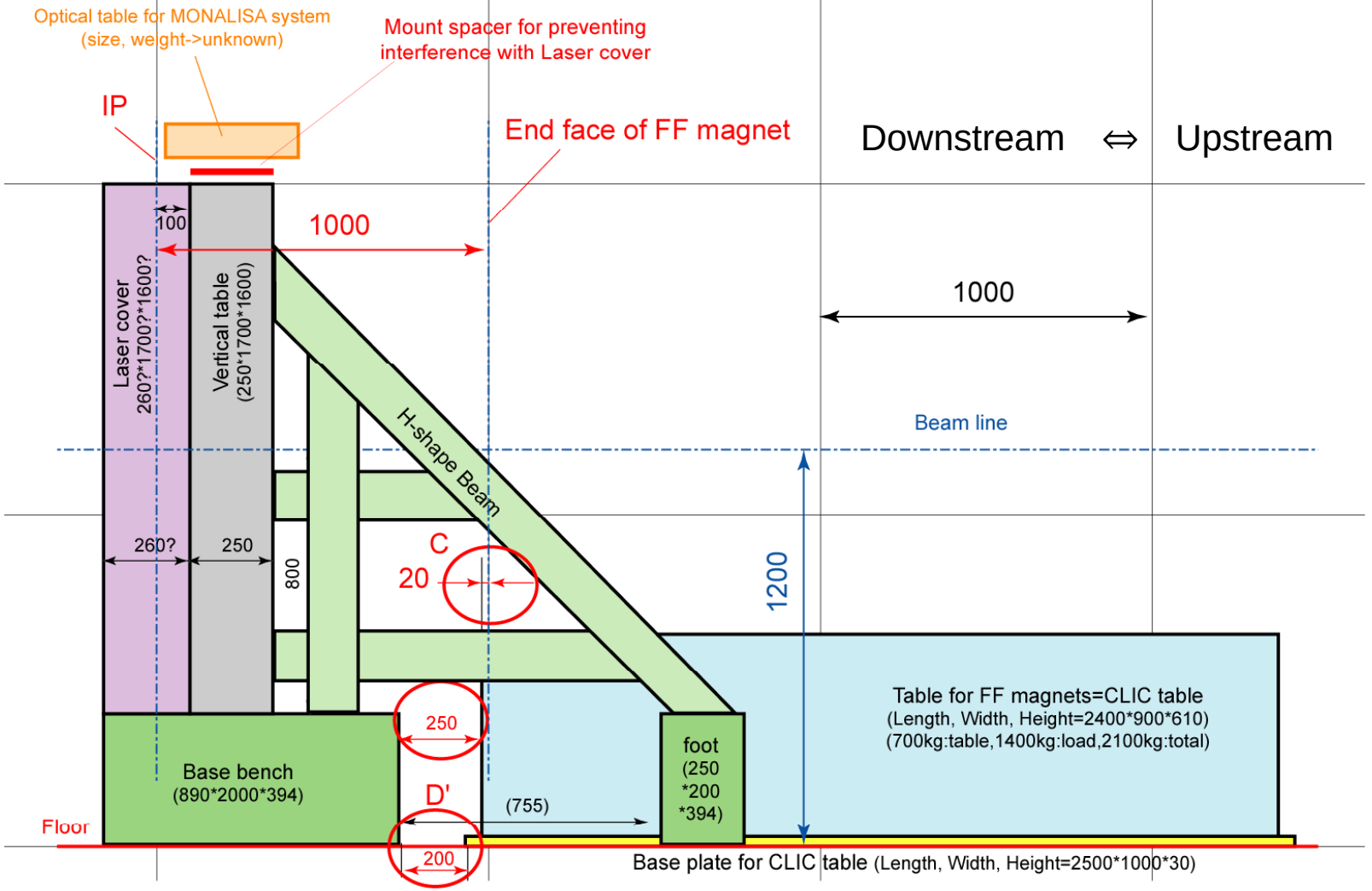
Specifications expected for new table support

- ~10nm of amplitude for incoherent vibration with floor
  - >Use steal honeycomb core (<Al), thicker (110mm->250mm)
  - >Highly ridged mount on floor without any insulator
- ±5mm of height adjustable range with accuracy of ±1mm
  - >Shim between table mount and floor
- ±2.5mm of horizontal position adjustable range perpendicular to beam with accuracy of ±1mm
  - >Slide sheet between vertical table and horizontal table

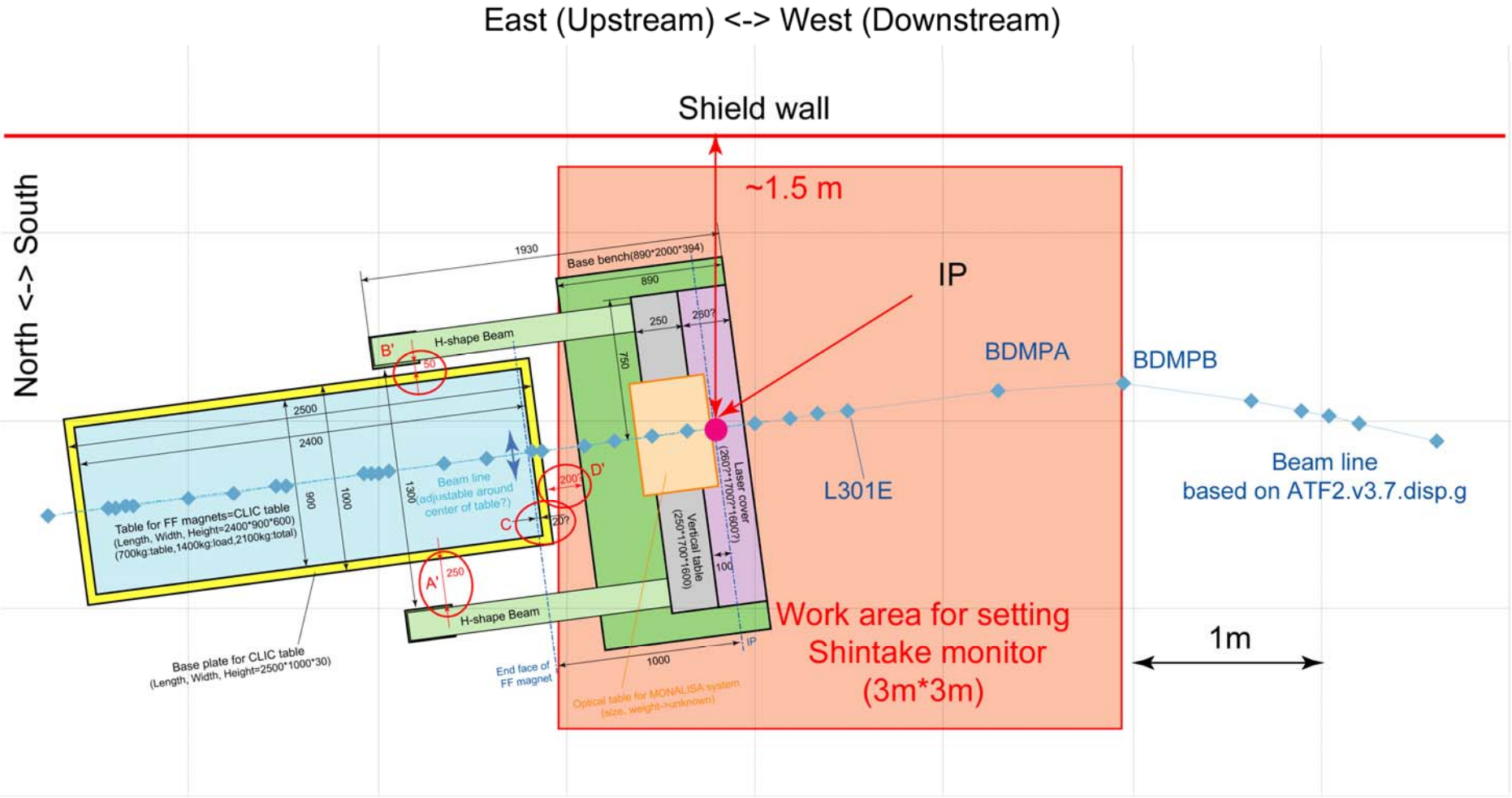
Shintake monitor mount-side view

assuming distance between end face of CLIC table and FF magnet is 20 mm,

distance between end face of FF magnet and IP is 1000 mm



Shintake monitor mount-top view

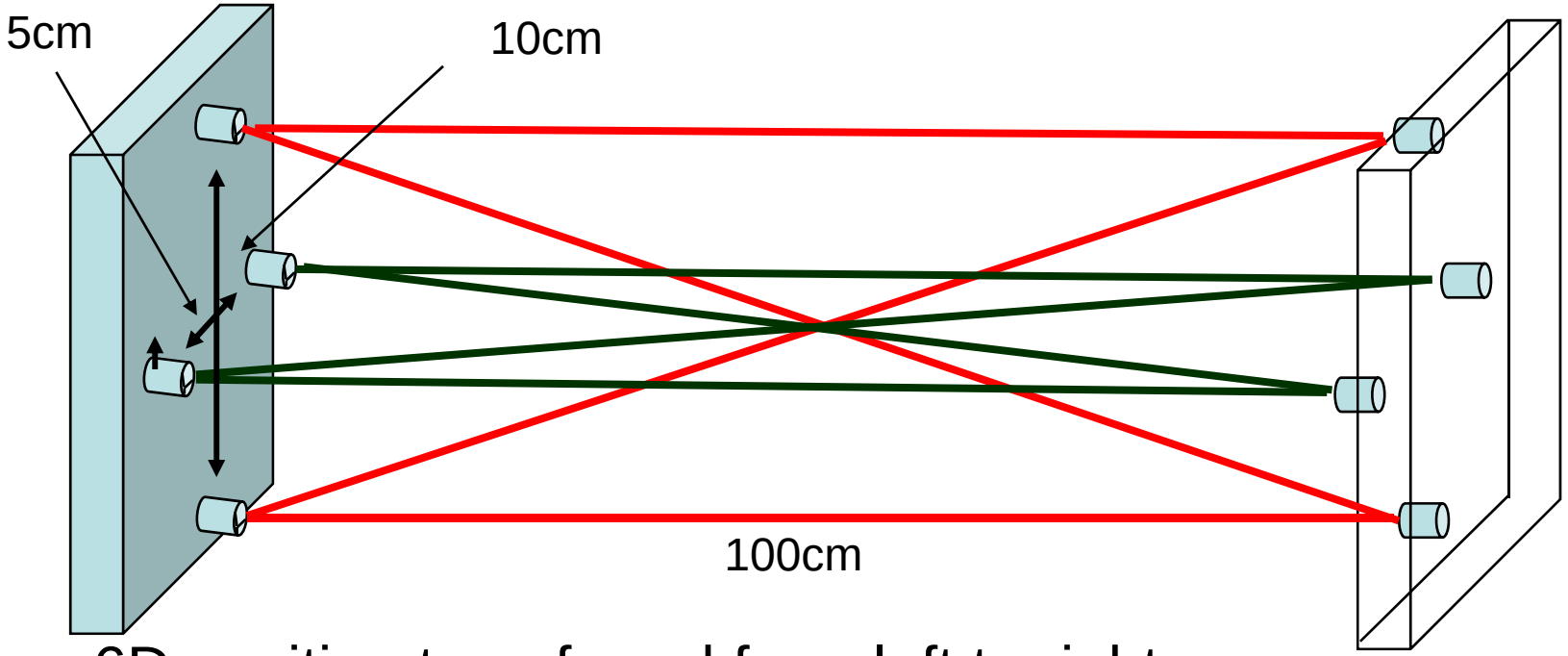


MONALISA Update

David Urner

ATF2 Meeting Dec 19 2007

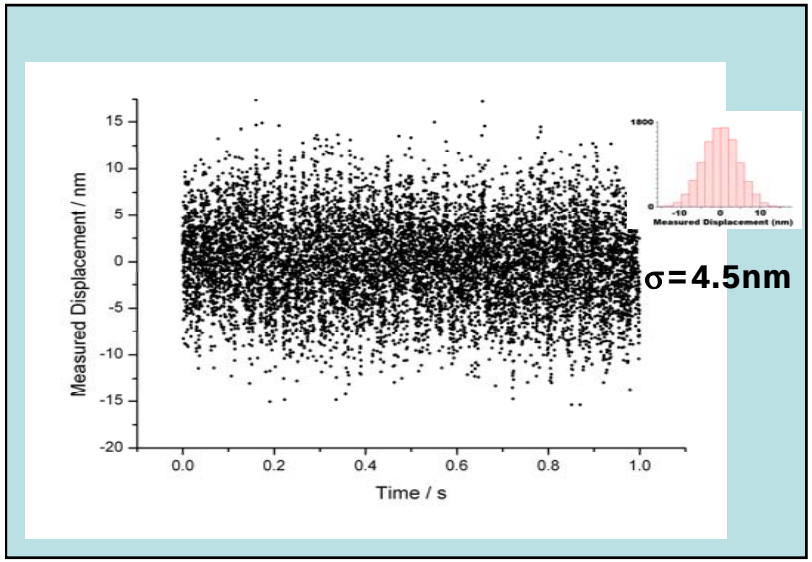
CSM (Compact Straightness Monitor)

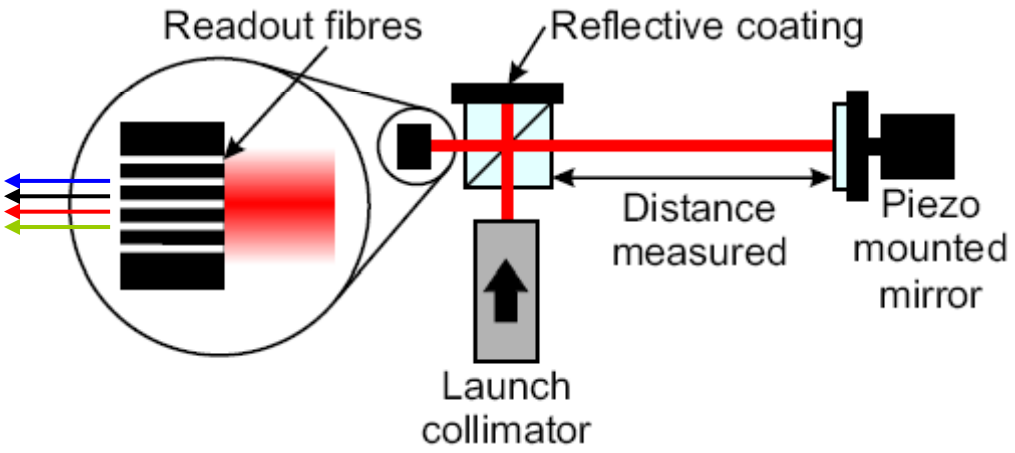


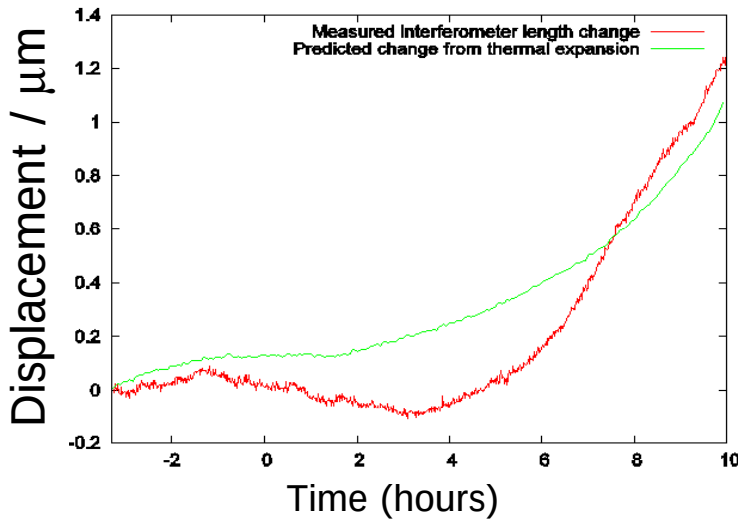
- 6D position transferred from left to right
  - breaking of symmetries is important
- Preliminary simulation results of CSM Resolution:
  - σ_y:10nm
  - distance meter resolution: 1nm
  - Positional change of optics components with respect to each other: 1nm That's the challenge.

Multi-fibre read out (compact launch)

FFI: Fixed Frequency Interferometry (OPD 400mm)





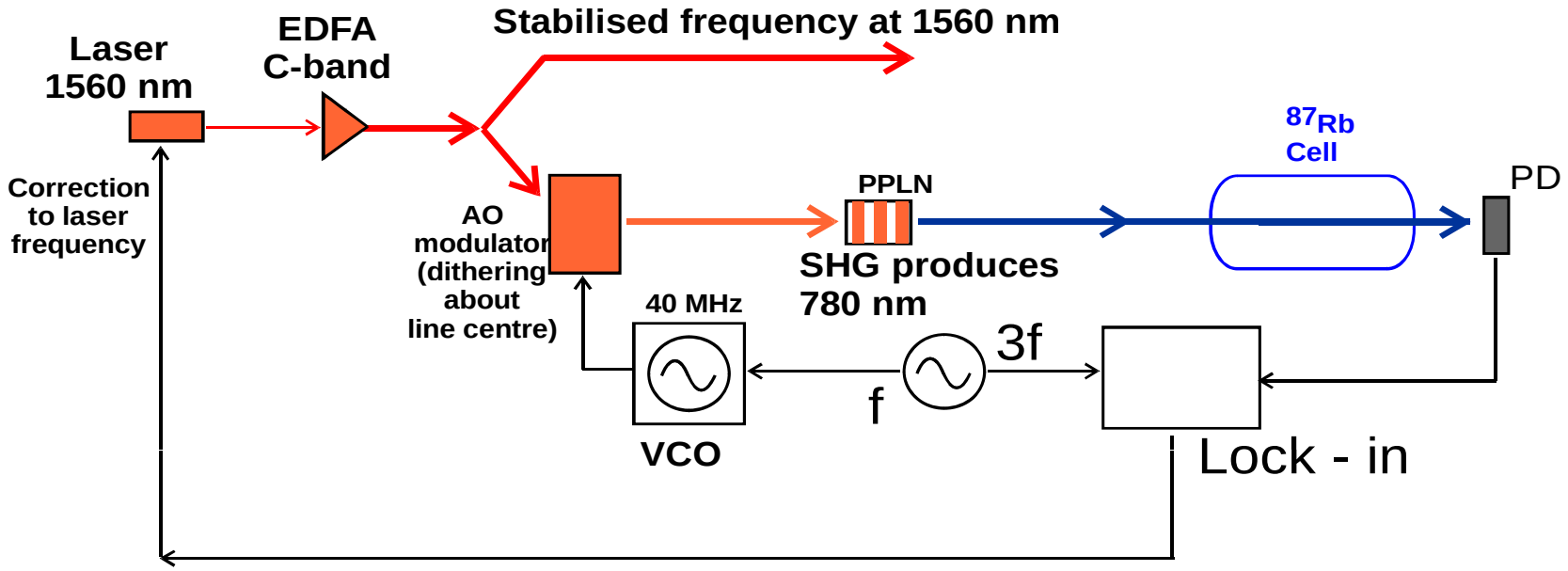


- Fixed frequency laser (FFI)
- Compact Launch: 25x25x15mm
- Test *shown here* with moving mirror
- First stationary mirror test :
  - resolution 5 nm demonstrated
  - to be improved with vaccuum
  - and laser frequency stabilisation

Frequency stabilisation

Frequency standard: ^{87}Rb D_2 line at 780 nm

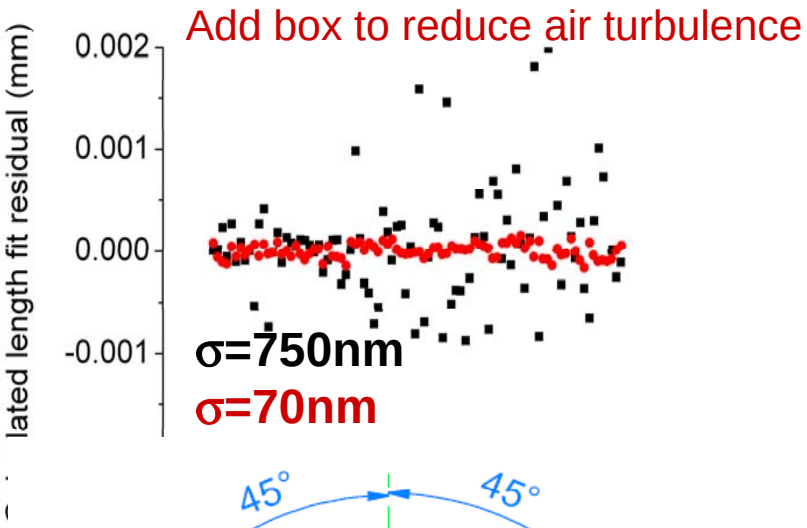
Simplified Schematic:

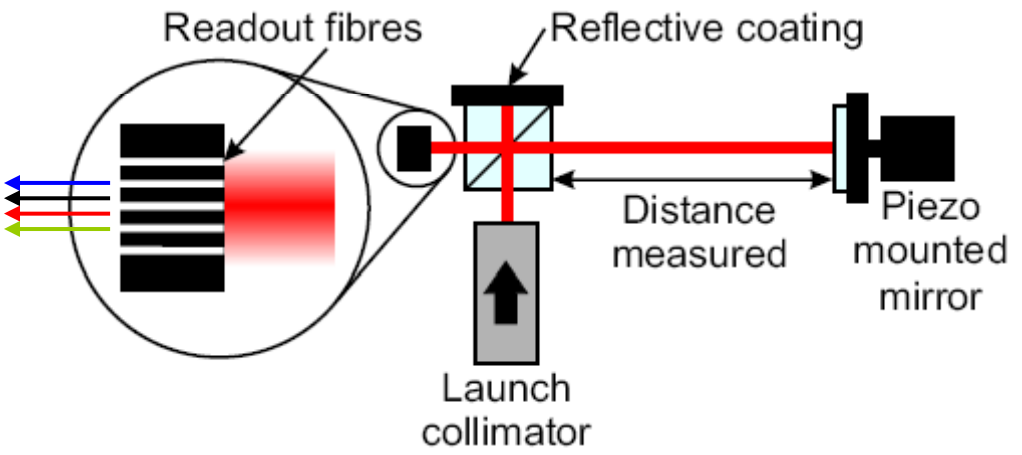


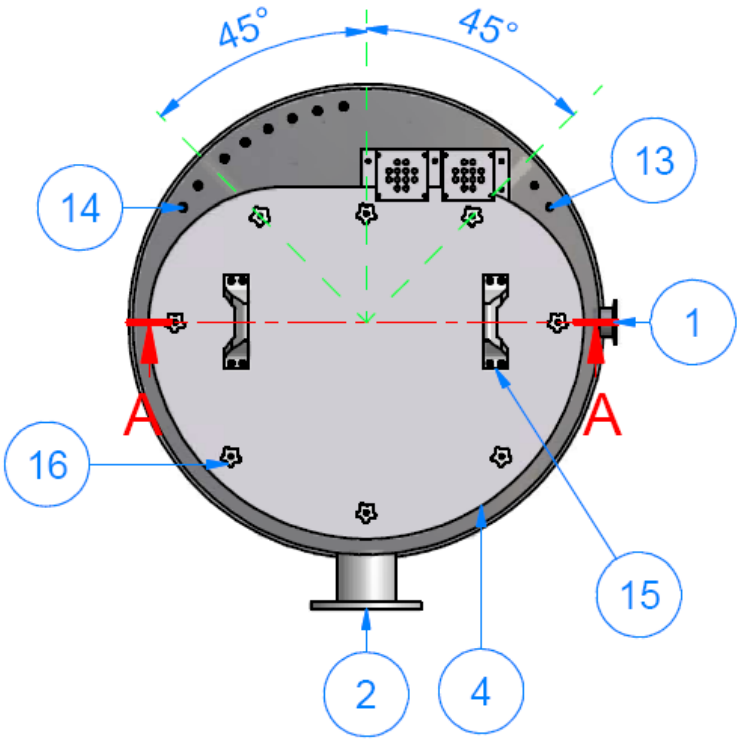
- Need 20 kHz stability for 1nm over distances of 10m.
- NPL done ~kHz.

Multi-fibre read out (compact launch)

FSI:Frequency Scanning Interferometry (OPD 400mm)

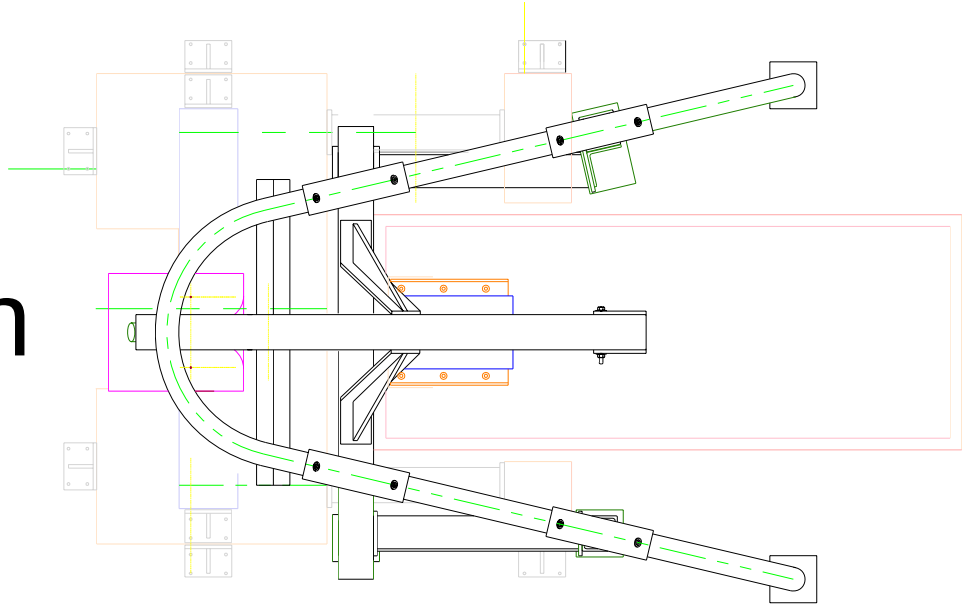




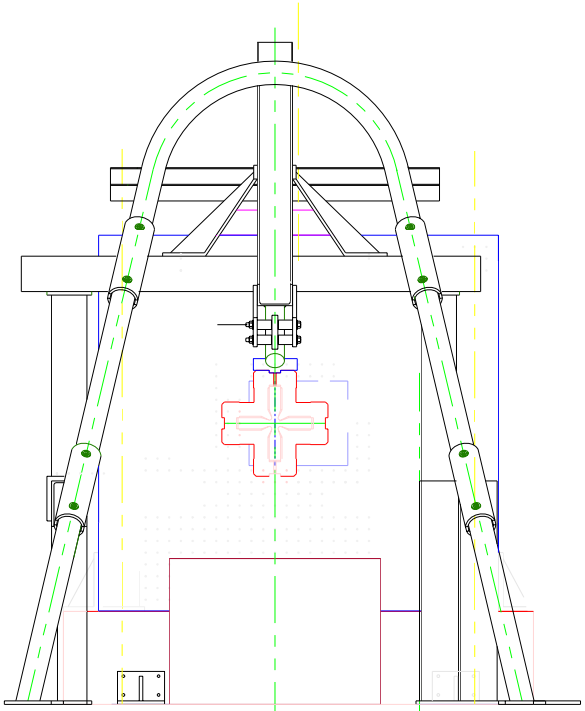


- Same interferometer can be used for FSI
- Better resolution by just covering interferometer with box
  - expect to do even better in vacuum!

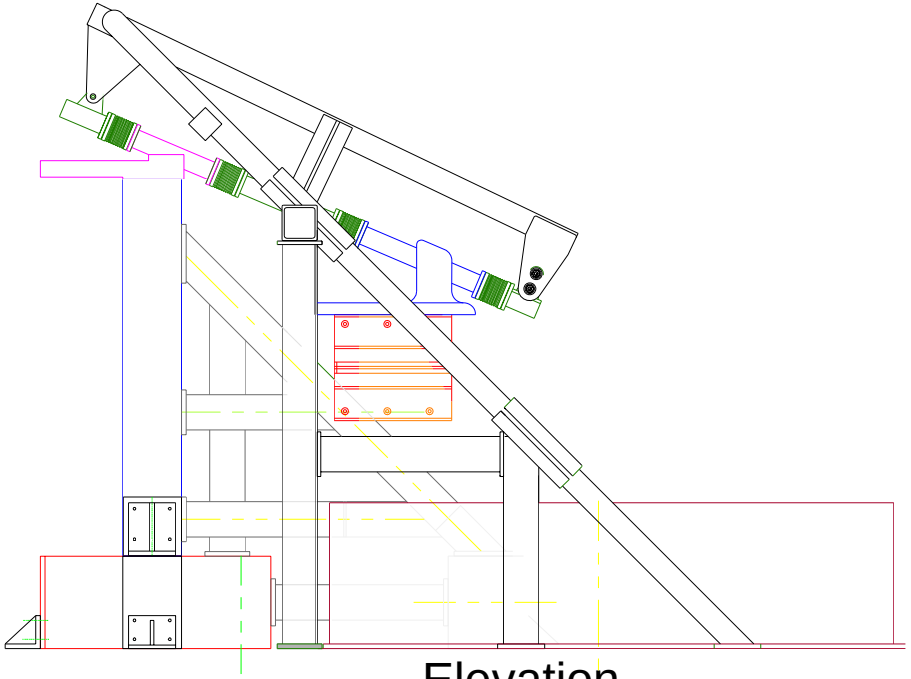
Overview of Current Design



Plan View



End View



Elevation