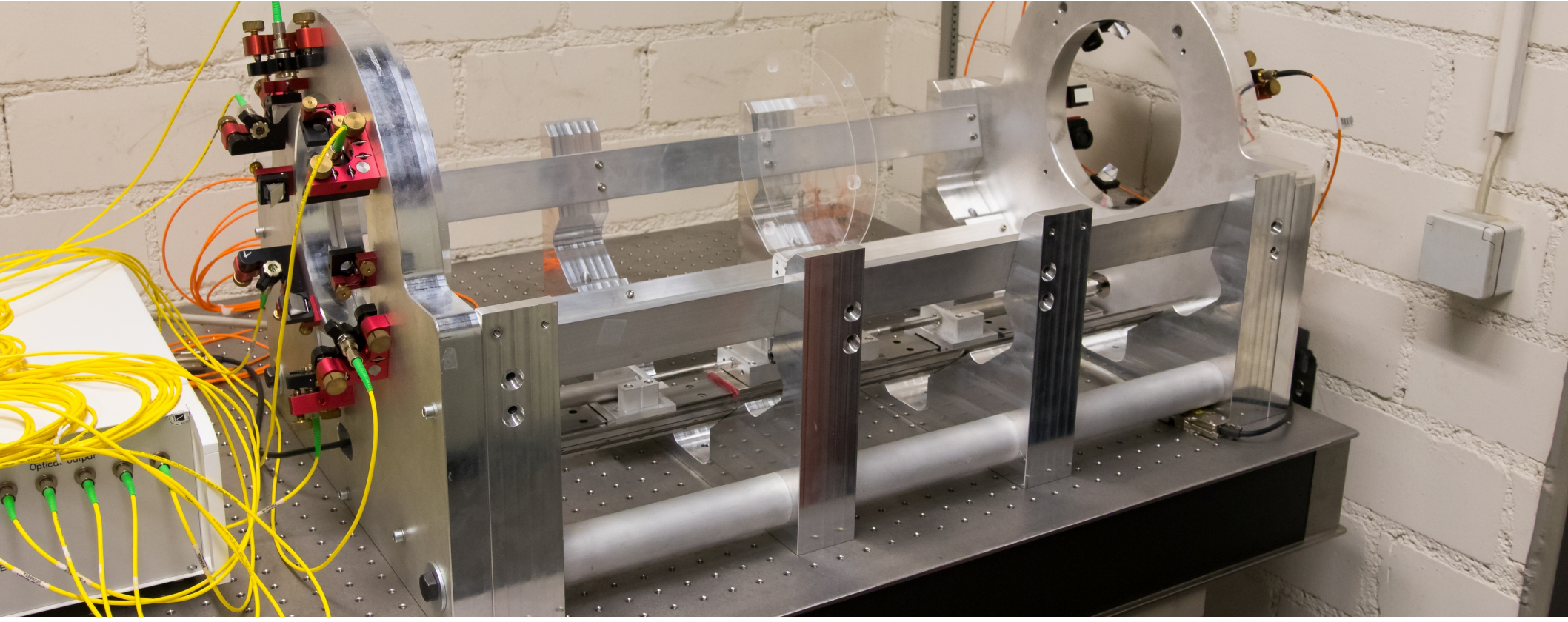


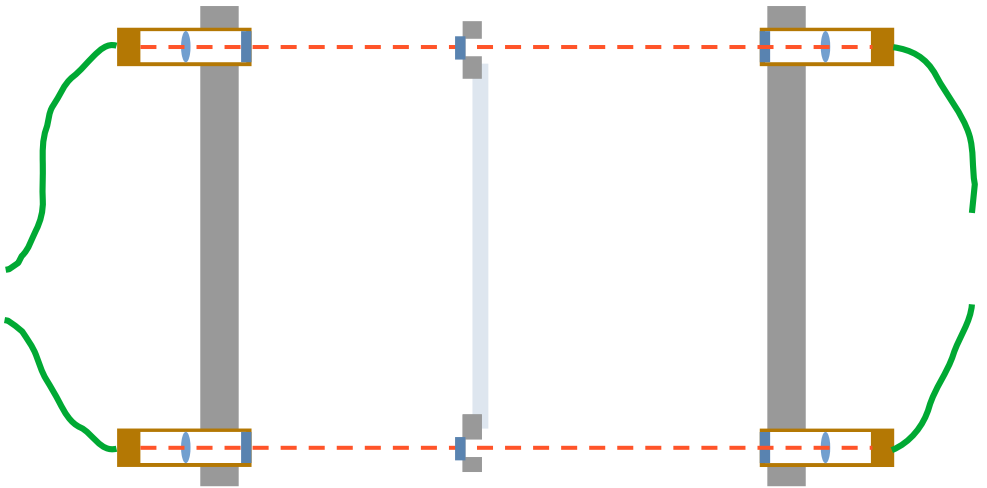
HighFinesse Interferometer

P-200 Technical Meeting, 24/01/22

Christian Strandhagen

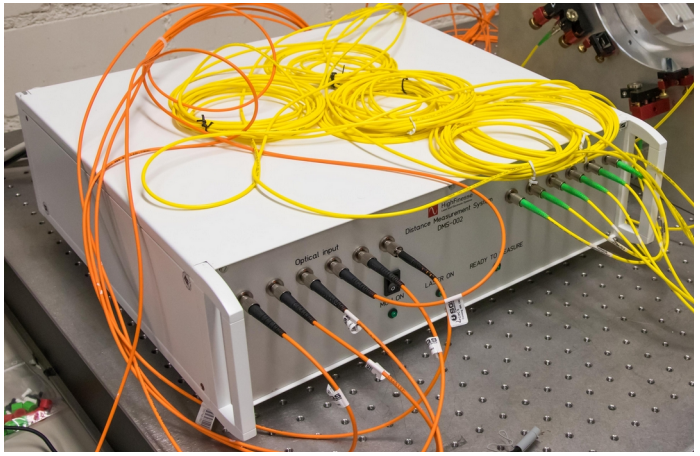
HighFinesse Solution

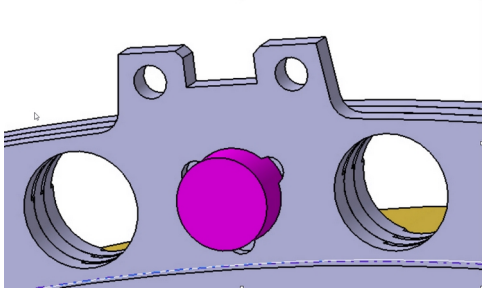
HighFinesse
Laser and Electronic Systems

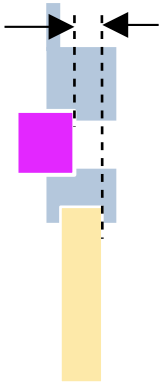


- performs a transmission measurement of a cavity
  → measures absolute distance ~1 µm
- needs special mirrors and free line of sight
- 3 arms per disk for position and tilt
- light is brought into cryostat with optical fibers
  → needs in- and outcouplers

Scope of Delivery







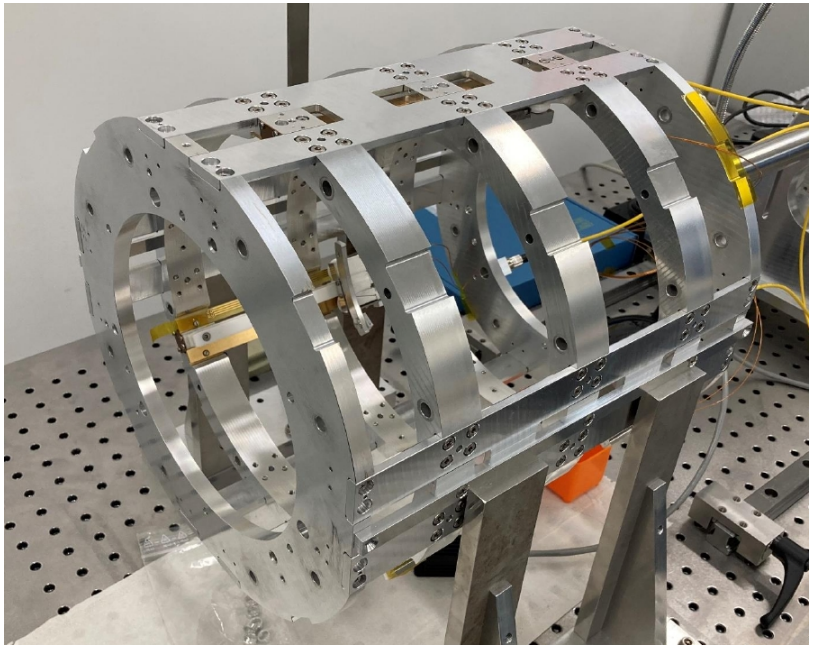
- 3 incouplers / 3 outcouplers
- 3 mirrors to be glued on disk ring
- laser and electronics box
- PC which performs the distance calculation (including software)
- interface box to motor control
- fibers, cables, etc.

Schedule

- electronics interface to motor control is developed
  - not sure if this can be / needs to be tested before
  - final part is in production
    → delivery next week
- next / final step is the production of couplers (no delivery date given)

Interferometer Integration

- gluing 3 mirrors on disk ring
- installing couplers in P-200 structure (no adjustment needed/possible)
- routing fibers and connecting to laser box
- commissioning and testing the system



someone from HighFinesse and our group will travel to Hamburg for ~ 1 week

Issues for Cryo-Tests

- still no cryo-compatible solution for gluing found
  → Igor will test clamping next
- optical components in couplers are also glued
  → high risk of breaking when cooling down
- concept for self-made feedthroughs is tested
  → need dimensions of flange if we need to produce one