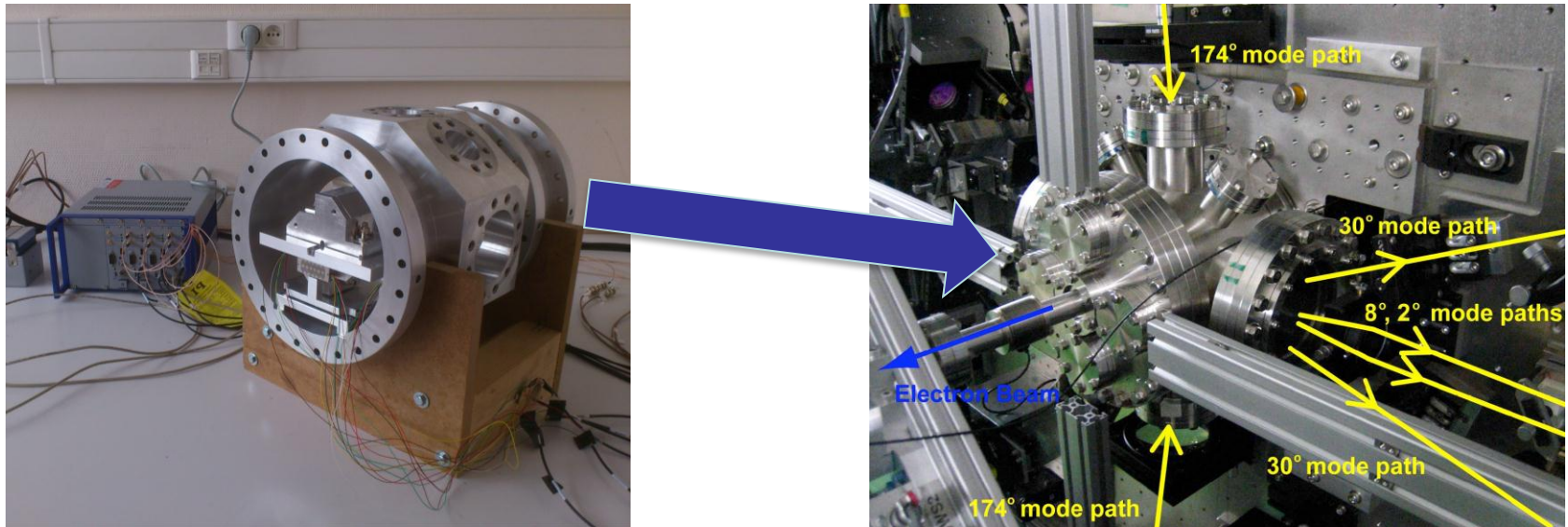


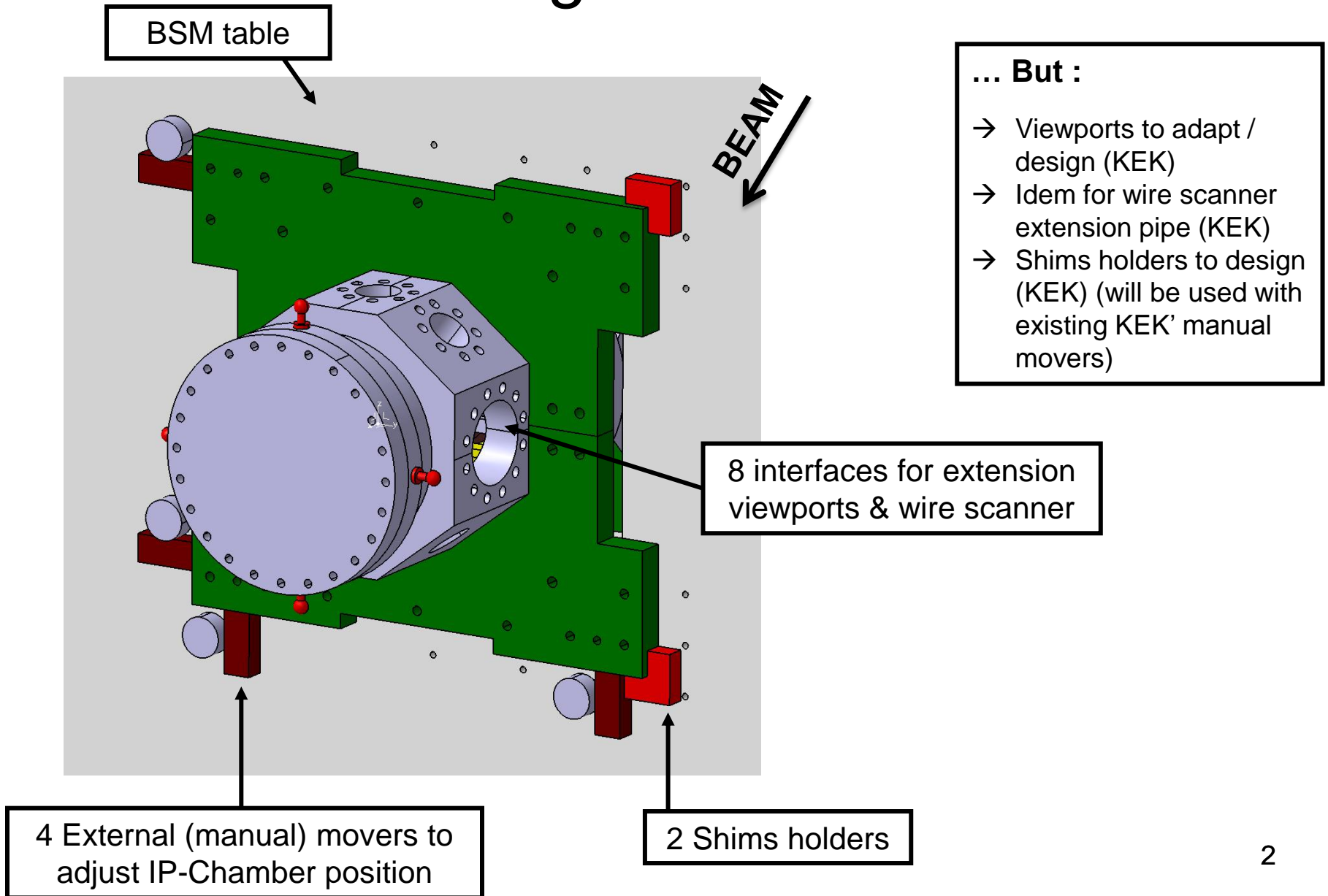
ATF2 - IP Chamber for IP-BPM

Design and manufacture of a chamber with high precision piezo actuators for high resolution BPMs

Status report - 23 Jan. 2013



Design : done...



Manufacture Status : almost done



Chamber and BPMs displacement system :

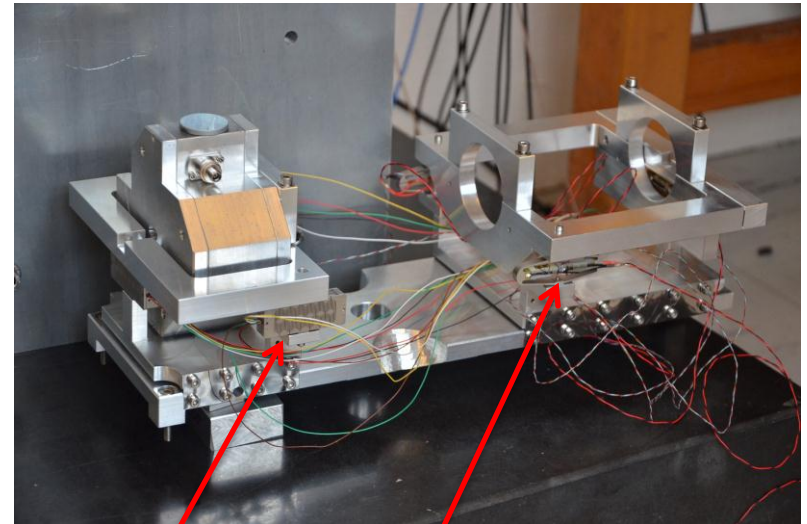
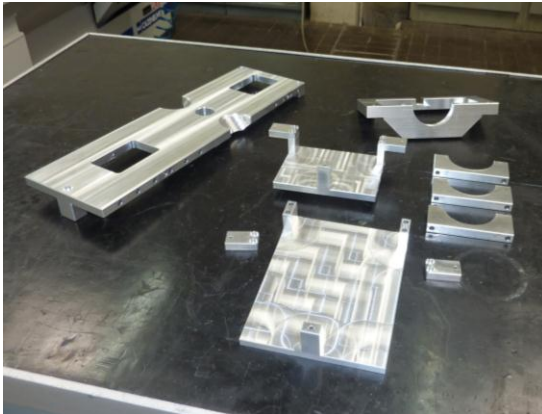
- Laurent Journet (Christine Gascq's Dpt), LAPP Annecy

Tools and modifications :

- LAL's workshop (Max Demarest's Dpt), LAL Orsay

To be done : Chamber to BSM table fixture

(→ **scheduled mid. feb.**)



4 Cedrat piezo actuators

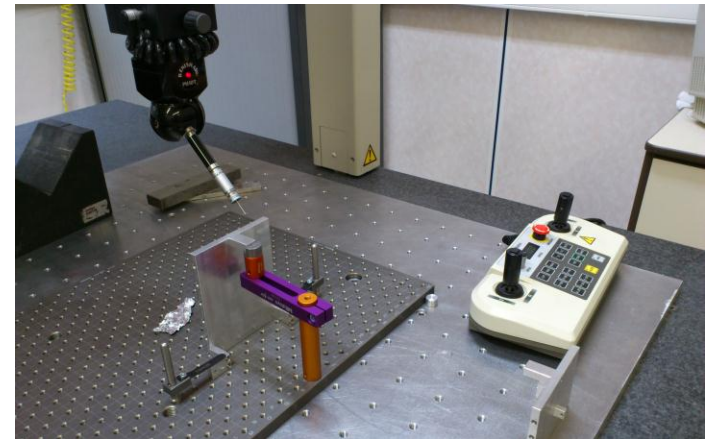
4 PI piezo actuators

Dimensional Checks

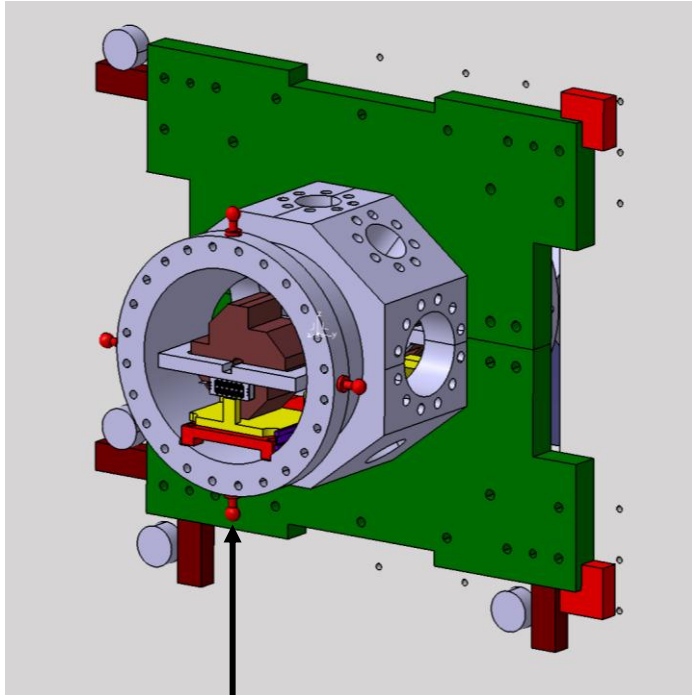


Performed with 3D Mitutoyo machine (5 μm accuracy, 1 μm resolution)

- Chamber and internal parts : OK
- Bruno Leluan, LAL Orsay



Dimensional Checks

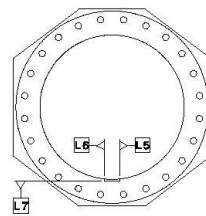


Mires

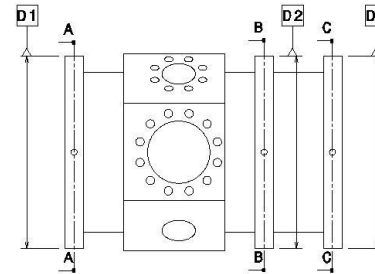
Position of internal references were measured with regard of external references (for mires)

→ Data useful for BPMs external pre-alignment

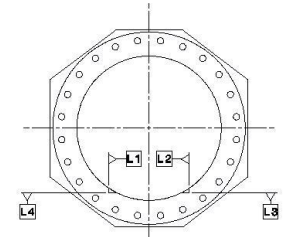
→ Bruno Leluan, LAL Orsay



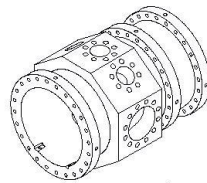
Vue de droite
Echelle : 1:4



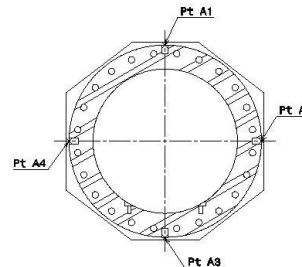
Vue de face
Echelle : 1:4



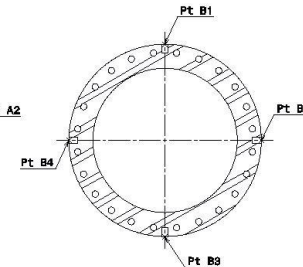
Vue de gauche
Echelle : 1:4



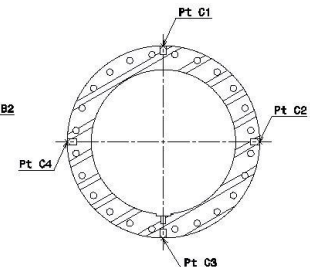
Vue isométrique
Echelle : 3:20



Coupe A-A
Echelle : 1:4

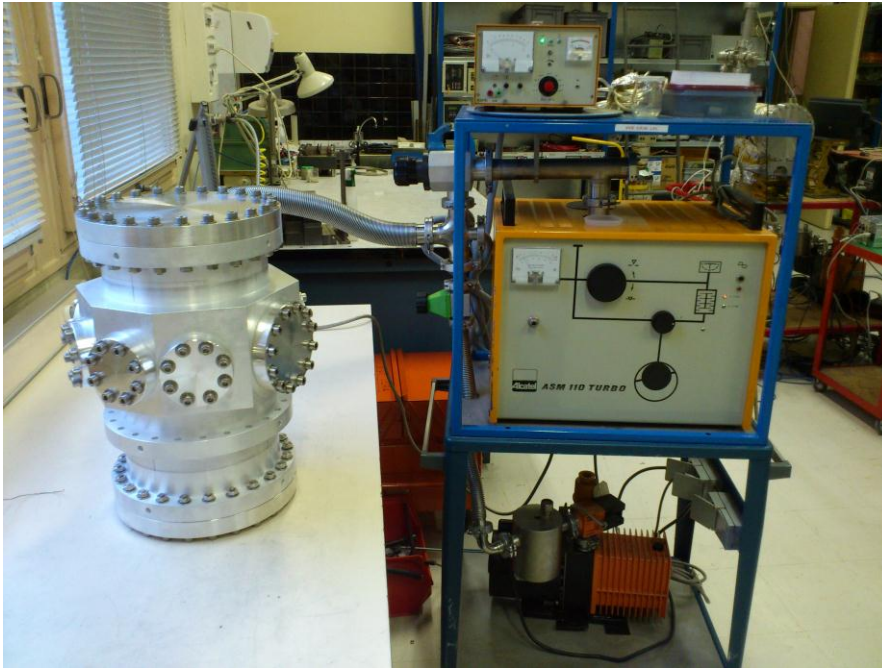


Coupe B-B
Echelle : 1:4



Coupe C-C
Echelle : 1:4

Chamber vacuum test : done



He leak test OK :

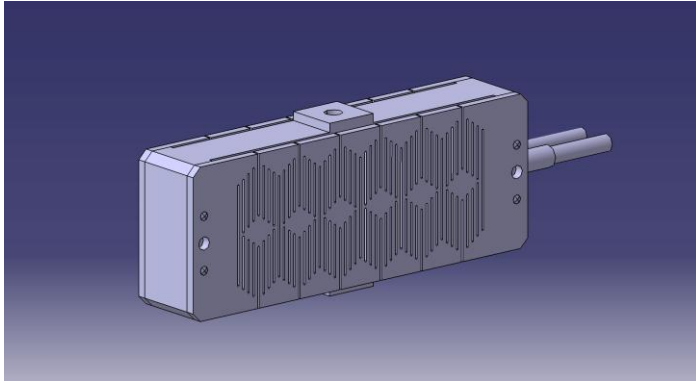
→ Flowrate at 3×10^{-8} Atm.cm³/s
(suitable for UHV)

Data :

- All parts cleaned (SS insert removed and then reinstalled)
- 1.5 mm dia. indium seal (wire)
- Indium wire flatten up to 0.15 mm thickness (screws tightened at 6 Nm)
- Aluminum flanges with 0.7 mm dia. groove for wire positioning
- Test performed at 10^{-5} mbar

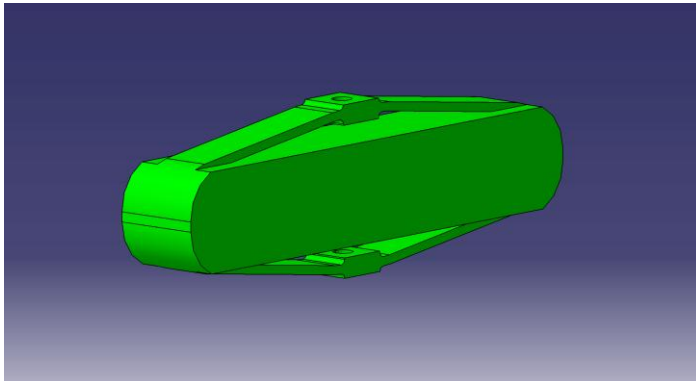


Piezo actuators vacuum test : done

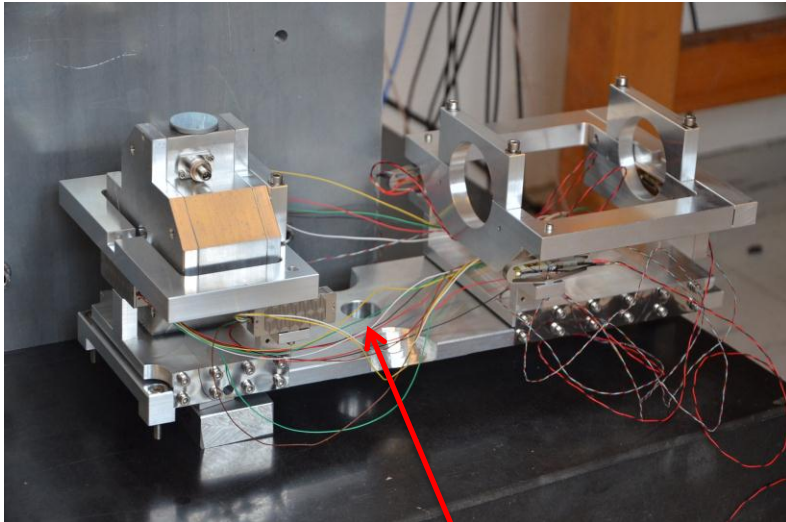


Outgassing OK :

→ Flowrate at 8×10^{-8} mbar.l/s (suitable for UHV)
at 21 deg. C. and after a 100h pumping.
No organic compound detected.



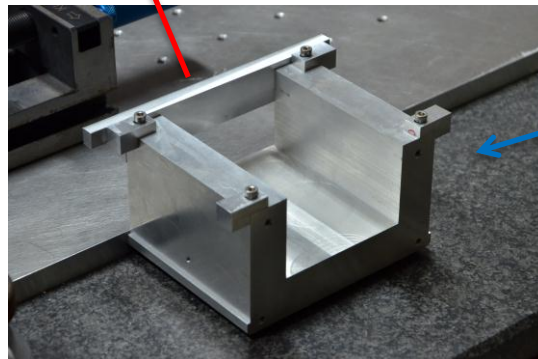
Adjustments of BPMs positioning system



BPMs position will be adjusted with respect of interfaces « Chamber / BPMs displacement system »

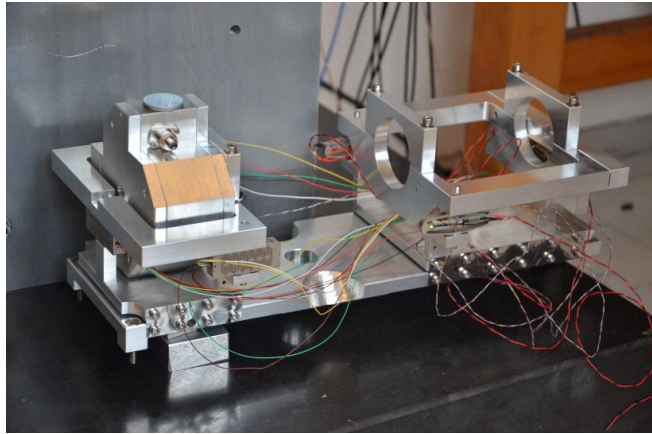
- Place shims (SS foil, 20 μm min. thick) below actuators
- Check BPMs position / interfaces with 3D machine
- Unmounting, remounting and recheck as repeatability test

→ **Scheduled week 7 (doublet BPM needed)**
→ Bruno Leluan & Sandy Wallon, LAL Orsay



BPMs positioning tool : give the right position to BPMs (distance to IP , lateral positioning, yaw, pitch (with third flat spot)).
Note : roll adjustment done when BPM is mounted to cradle/bracket

Cleaning of BPMs positioning system

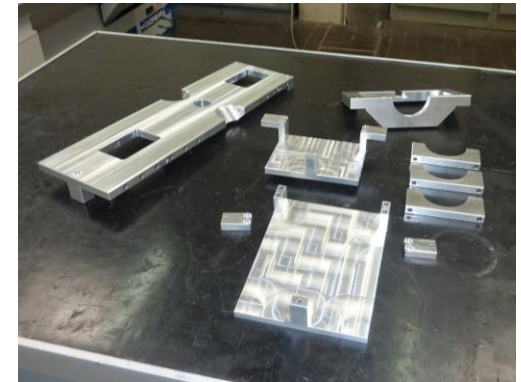


Cleaning for vacuum environment

- Unmount all parts
- Inserts to be removed before cleaning
- Remount with the positioning tool

→ **Scheduled week 8**

→ Manuel Alves & Sandry Wallon, LAL Orsay



Shipment and Installation

Transportation / Delivery

- Chamber : after LAL meeting in mid February 2013 (permanent exportation → tax to pay)
- BPMs positioning system with piezo actuators and electronics : Shipment at the end of January (temporary exportation → no tax)
- PLC and tools : Shipment at the end of January (temporary exportation)

All shipments with DHL service via Ulisse (CNRS goods transportation Dpt.)

Installation at KEK : 1st week of April 2013

LAL's job : Chamber installation ; support for alignment, wiring, actuators driving

KEK's job : Flanges* / feedthroughs & connectors / temp. probes / viewports supply and installation

(* Chamber comes with aluminum blank flanges and a SS DN 25 iso kf flange for pumping
(all are indium sealed)