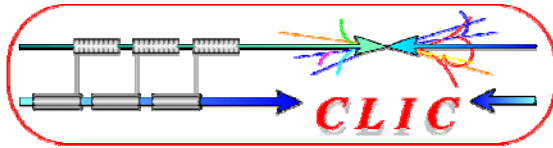
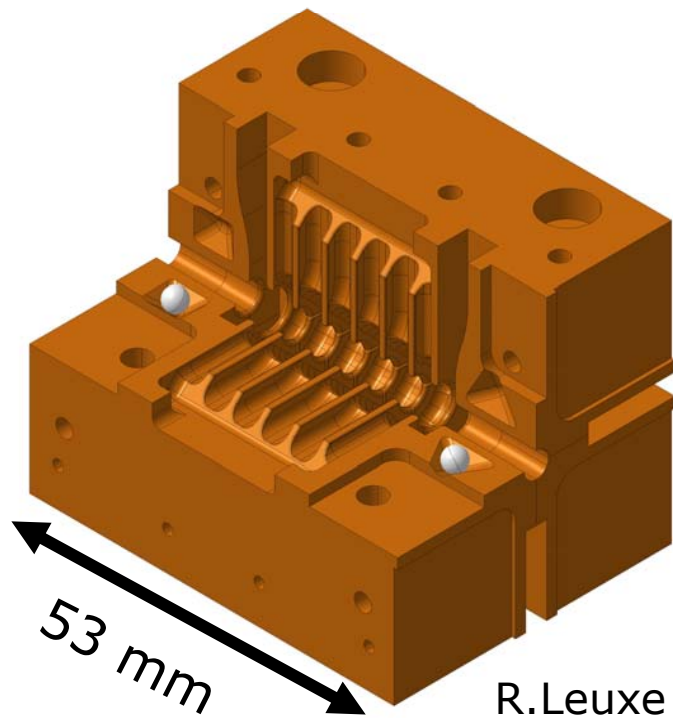
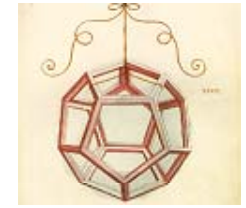
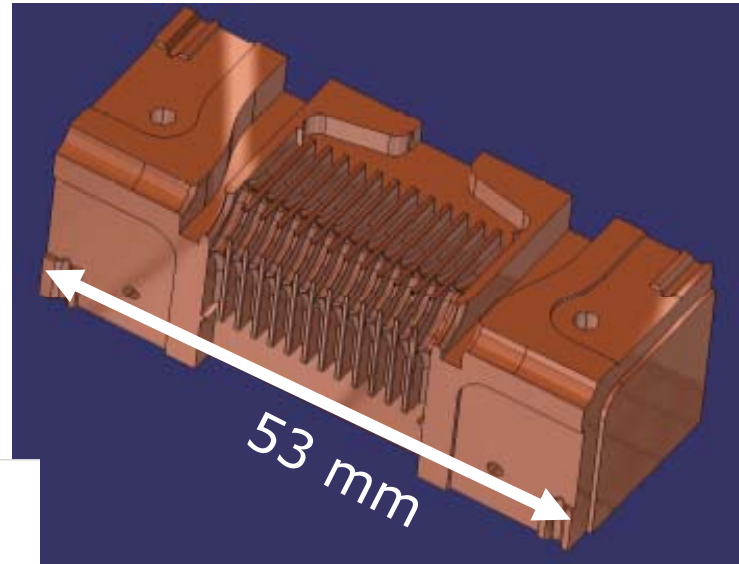


Examples of Mechanical Engineering Applications for CLIC



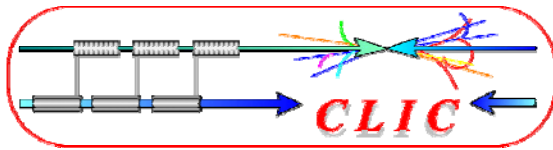
Alignment of HDS structures



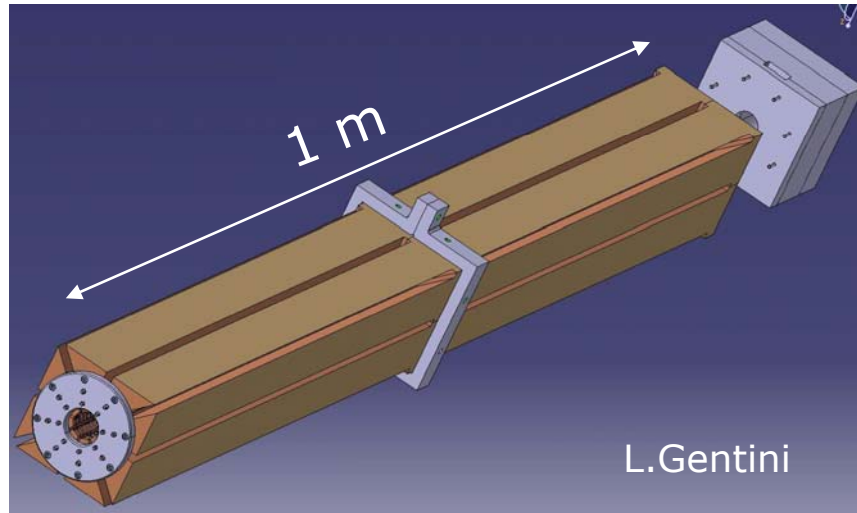
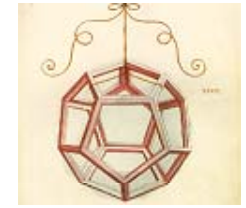
-alignment of the quadrants by balls and grooves (plastic deformation of copper) or pins and V-grooves: target 1 μm accuracy

-evaluation a priori of the expected accuracy and deformations would be suitable, other strategies (pins, statistical averaging,...), temperature effect

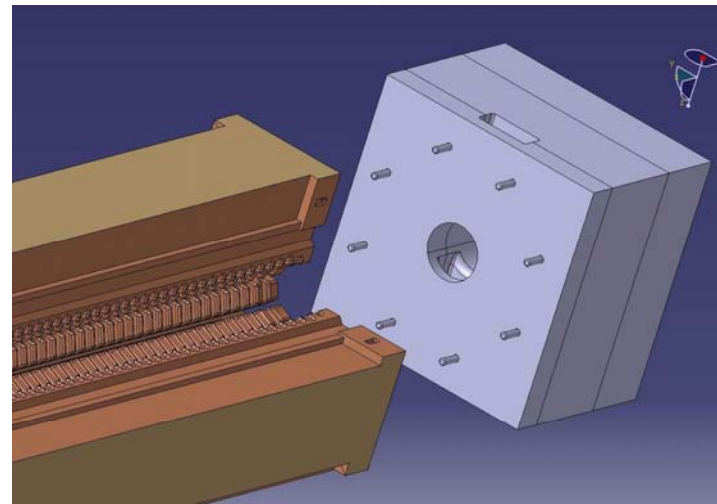
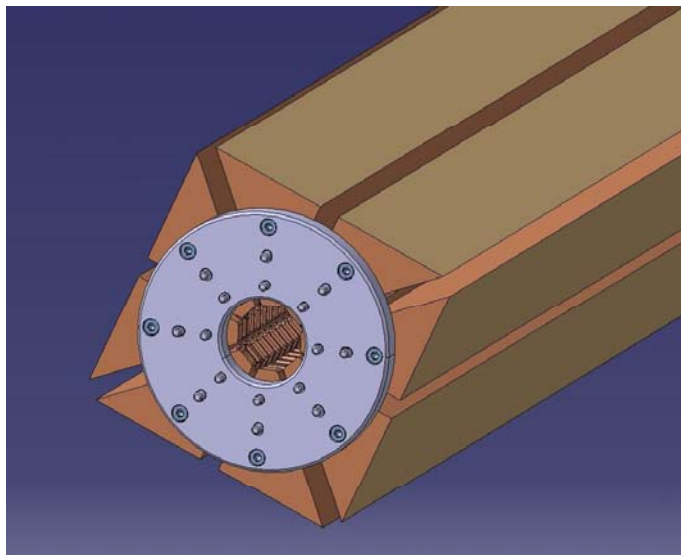
- presently studied by a mech.ing. student in AB

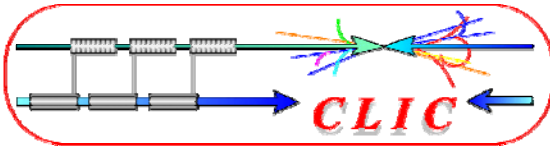


Assembly/Alignement of PETS for 2BTS

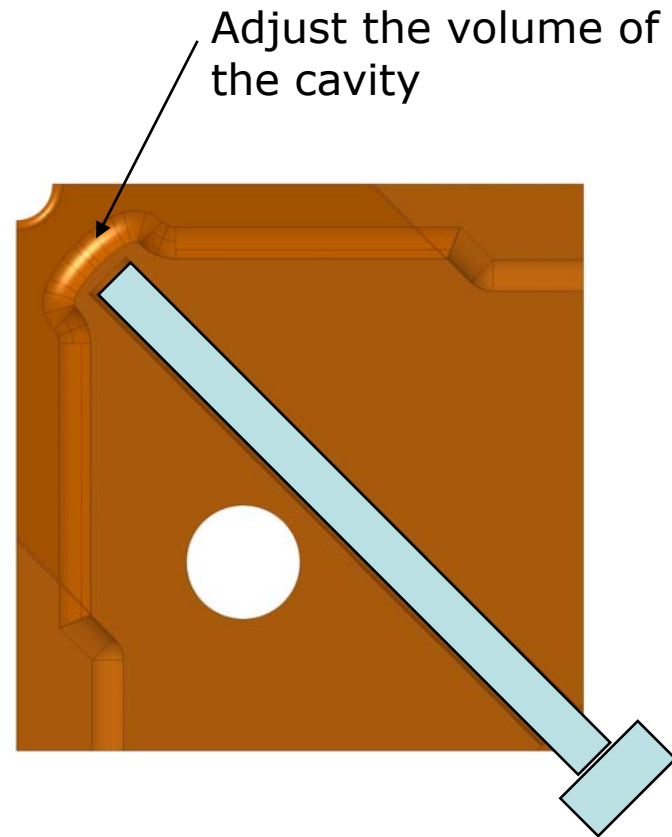
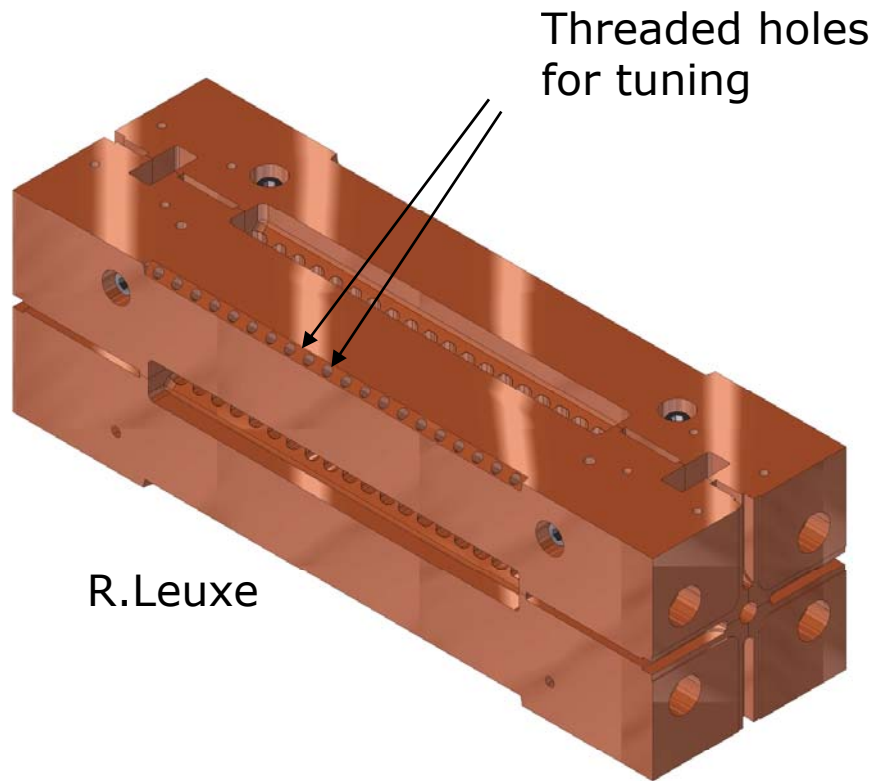


Alignment by pins:
-Target is 0.02 mm global precision
(alignment+ machining) in
longitudinal and transversal
direction
-which accuracy can be
foreseen with this configuration?
- Is it the best solution?

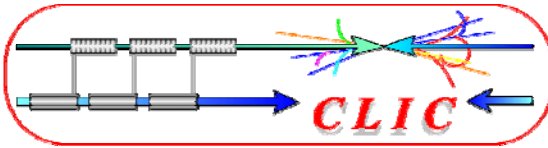




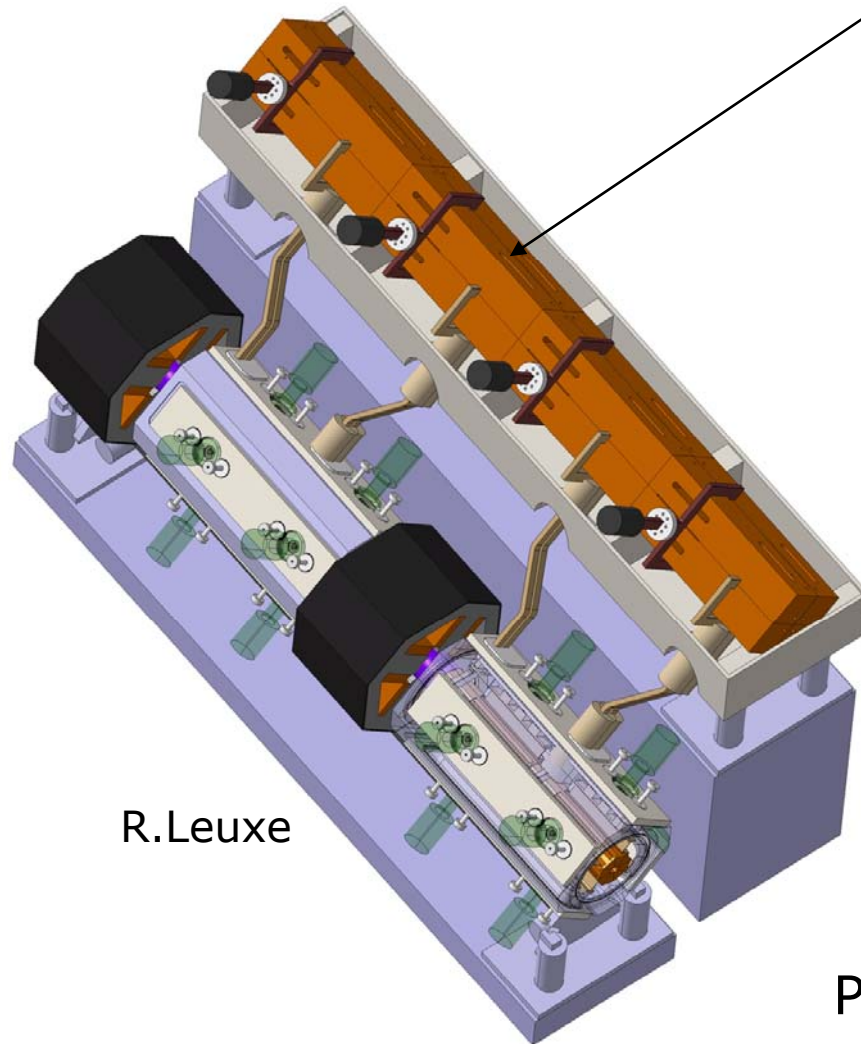
Tuning of accelerating structure cavities



- calculate the force needed for deformation, size of screw
- is it safe for annealed OFE-copper?
- a test-piece can be built, but it does not really tells how much margin remains



Cooling of accelerating structures



R.Leuxe

About 3KW/m to be dissipated

The structures are under UHV

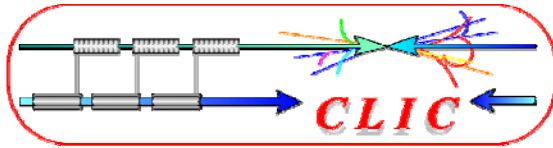
Solution1:

-Water through the structure and a lot of connections of water pipes in vacuum

Solution2:

- Cool through a closed circuitry connected to the structure with flexible braids

Presently studied by a mech. Ing. student in AB



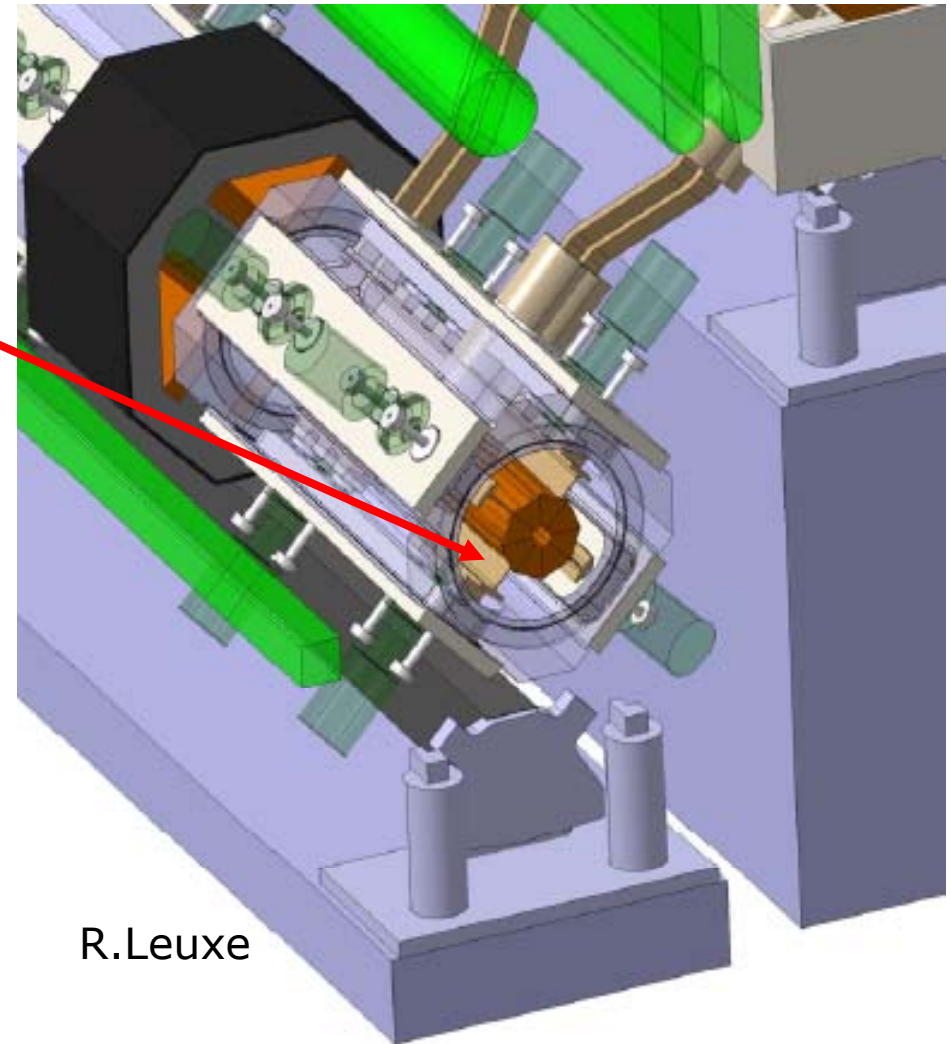
PETS ON/OFF (Petsonoff)



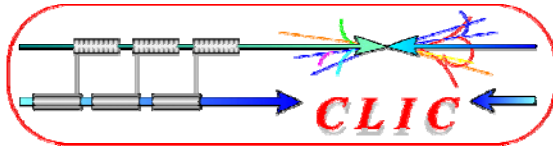
Blade: copper
Length: 225 mm
Flatness, straightness: 0.01 mm
Stroke: 14 mm
Radial accuracy of final position:
0.050 mm
Action time: 18-20 ms
Symmetric position of the blade
in the slit

Prototype motion and
performance to be monitored

Manufacturing end 2007
(project resp.: B.Nicquevert)



R.Leuxe



Conclusion:

There is a continuous series of small/large problems which require mechanical engineering and calculation beyond the pure design task

At present the decisions are often taken based on experience (sometimes there is none), but this will never promote new solutions

It would be suitable to allocate manpower for short term interventions