# GBP mechanics @ Infn Padova

M. Benettoni on behalf of Luxe GBP group

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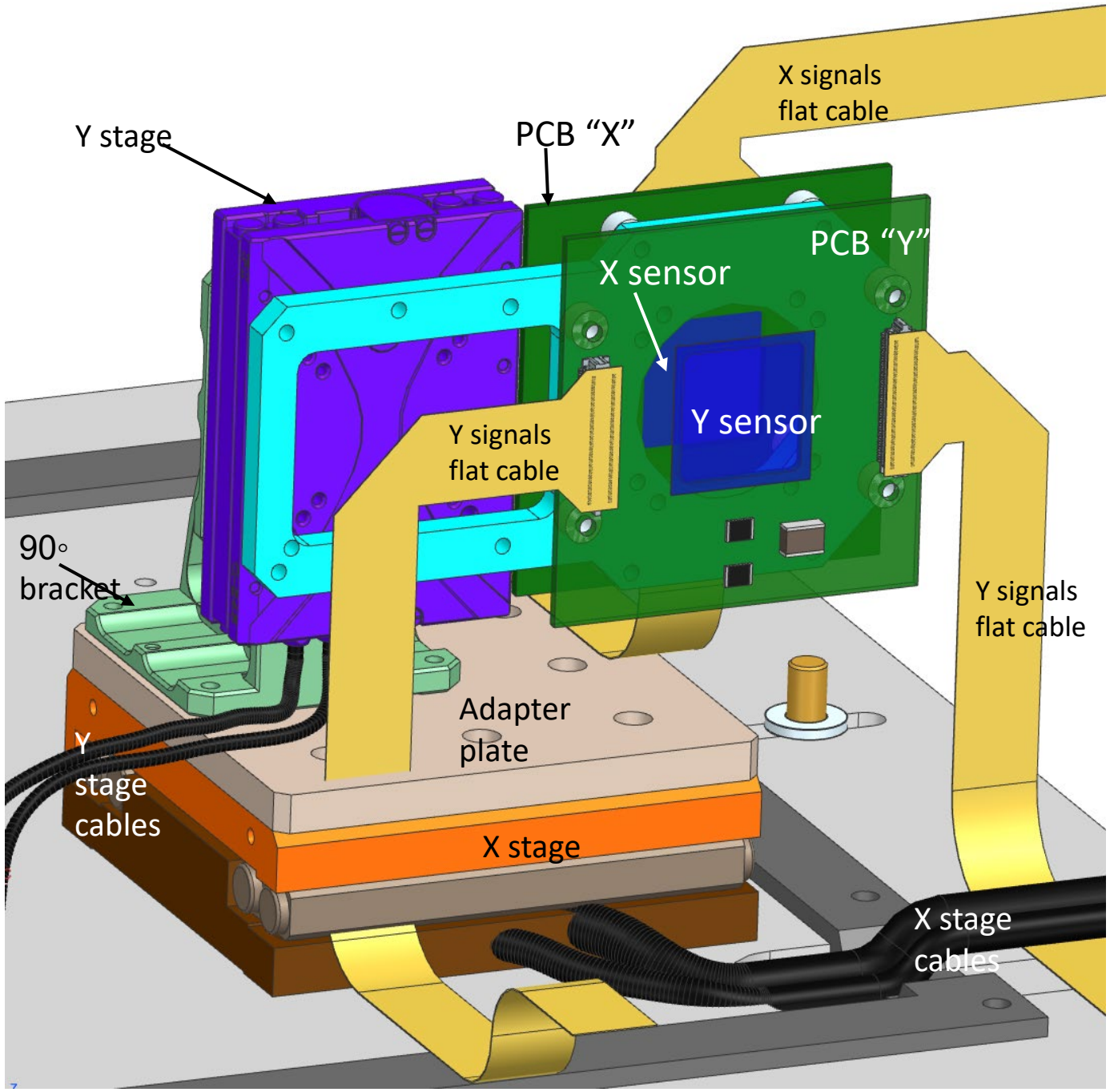
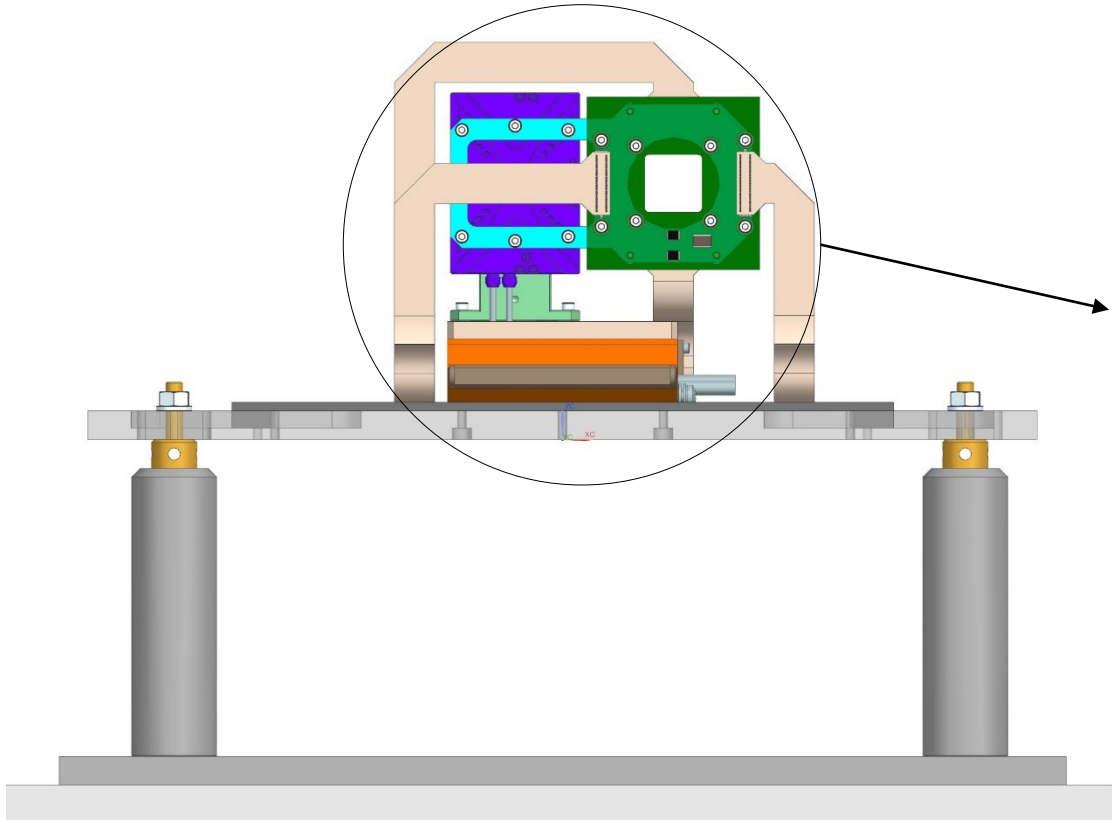
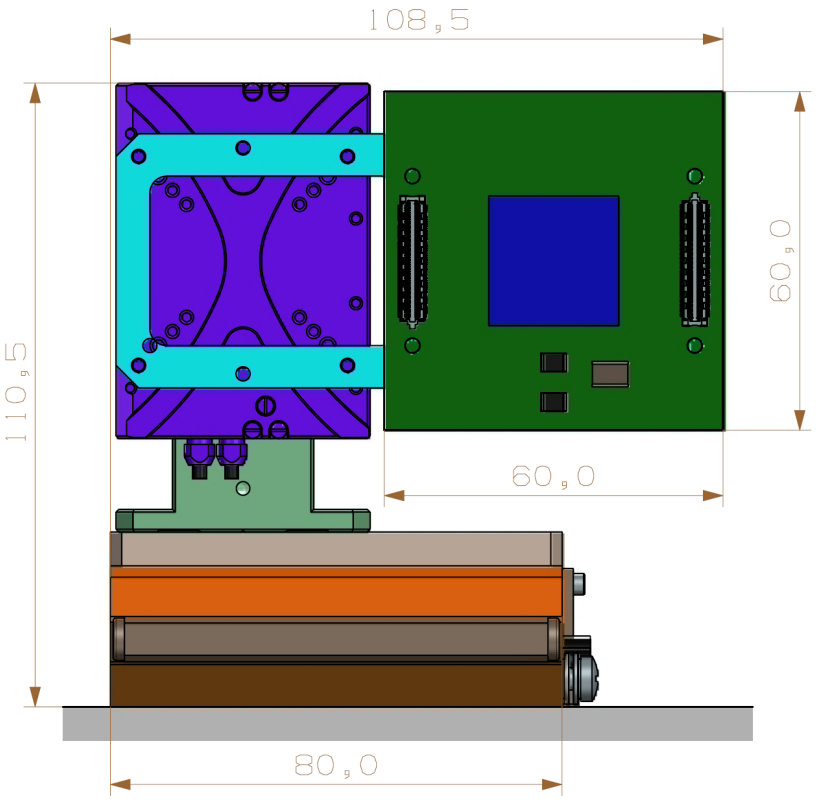
# GBP station


X signals
flat cable
Y stage
PCB “X”
PCB “Y”
X sensor
Y sensor
Y signals
flat cable
90◦
bracket
Y signals
flat cable
Adapter
plate
Y
stage
cables
X stage
X stage
cables




108,5
110,5
60,0
60,0
80,0

# GBP detector: 2 stations

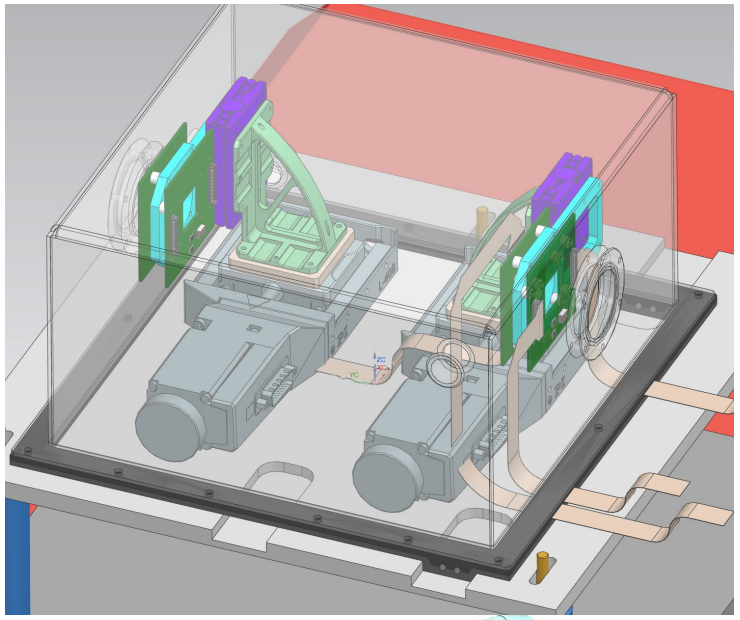
Two stations on the same kinematic mount platform. Cheap X stages
X axis PI L-408.501200
https://www.physikinstrumente.com/en/products/linear-stages/stages-with-stepper-dc-brushless-dc-bldc-motors/l-408-compact-linear-stage-100000035/
Y axis PI Q-545
https://www.physikinstrumente.com/en/products/linear-stages/miniature-linear-stages/q-545-q-motion-precision-linear-stage-103170/

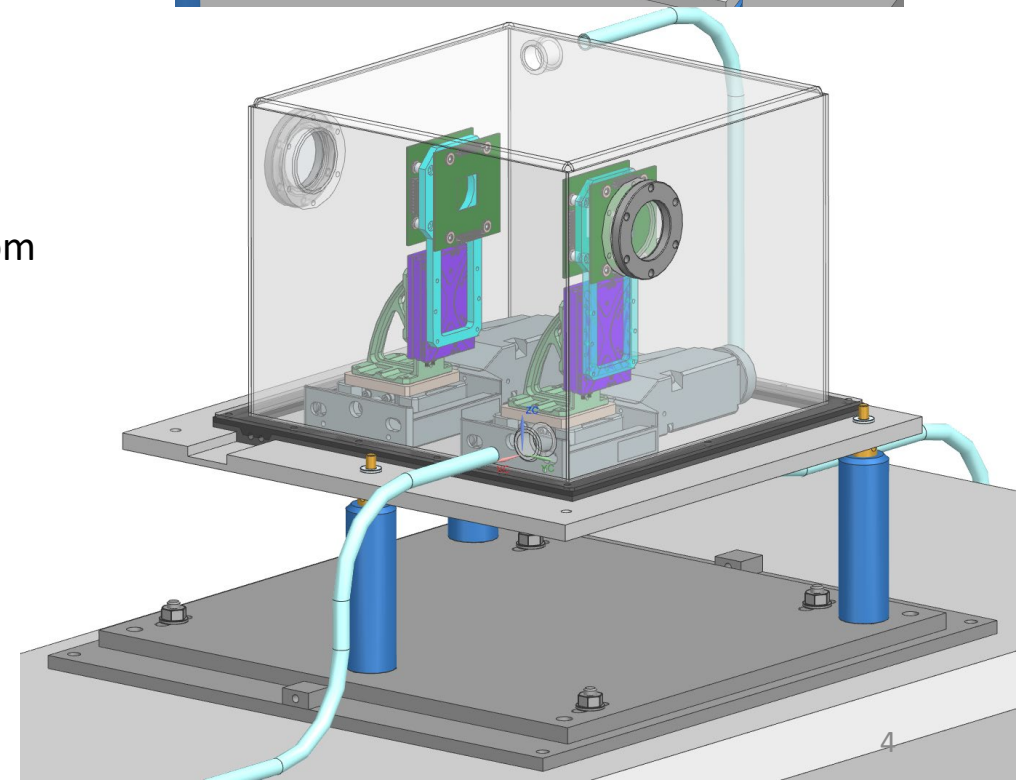
mechanical layout to ensure accessibility to detectors for maintenance (once cage removed)
Sensor PCBs mounted on support brackets, same orientation w.r.t. beam direction

Faraday cage made of bent aluminum e.g. 1 mm sheets

Air sealing of cage to base plate by means of gasket, e.g. 3D printed gasket
Flat cables compressed between the two gaskets
Flat cables bent/folded at 45^ to get 90^ angle and adequate degree of freedom for movements ..
Slots in the base plate to pass cables (sealed by the gaskets)
Circular flanges for beam Kapton windows
Dry air or N2 in/out vent ports at opposite corners

Platform current dimension ~ 35x35 cm





# … questions …

- What is the geometrical volume available for installing the GBP
- What kind of structures are already foreseen or can be available if needed to support the detector and the electronics ?
- Are there going to be residual magnetic fields in that volume ?
- Will there be Nitrogen or dry air available if we want to flush the Faraday cage ?
- Any prescription on circuit components?
- Are there limits for thermal power released in air by the electronics?
- What are the safety requirements for cables and other material to be installed in the tunnel ?
- Will AC power and Ethernet sockets be available for hooking up the GBP?
- Any preferable side and/or position for minicrate, stages PS and controls
- Are there information about ground vibrations (vs precision order of magnitude 5um)
- To which precision is known the beam axis position
- Which high wrt floor
- What kind of  alignment/measuring features/devices  are in use