



Motorized 3D Table: JRA2-SiTRA EUDET project

G. Daubard and P. Ghislain
 LPNHE-Université Pierre et Marie Curie/IN2P3-CNRS
 D. Gamba, B. Giraudo, P. Mereu
 University degli Studi in Torino and Torino/INFN

A 3-dimensional motorized table has been built by the LPNHE team and it is used for the Lab test bench to test the Silicon modules prototypes and it will be used this year for the test beam at CERN. It is currently piloted with a programme LABVIEW based. This software is going to be adapted to the overall DAQ software for the forthcoming test beams.

Figure 1 here below gives the mechanical design of the 3 D Table.

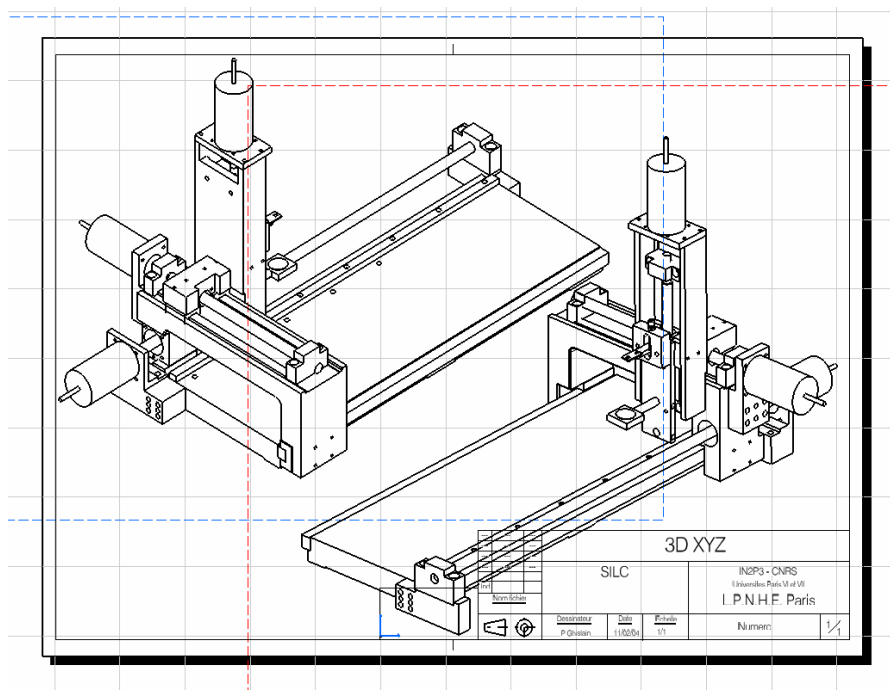


Fig 1. Mechanical design of the 3D motorized Table.

Figure 2 gives the full CAD design of this Table as studied with the CATIA software. The table is 700mm long, 250 mm large and 200mm height. The precision of movement is $\pm 10 \mu\text{m}$ on both the length and the height and allows steps of $5 \mu\text{m}$ on the transversal direction. This permits very fine scans of the sensor strip structure when testing it with a Laser on the Lab test bench. It allows for the time being to move the box with the small Silicon modules equipped with the new FE readout DSM chips, tested last year and in the first test beams in 2008.

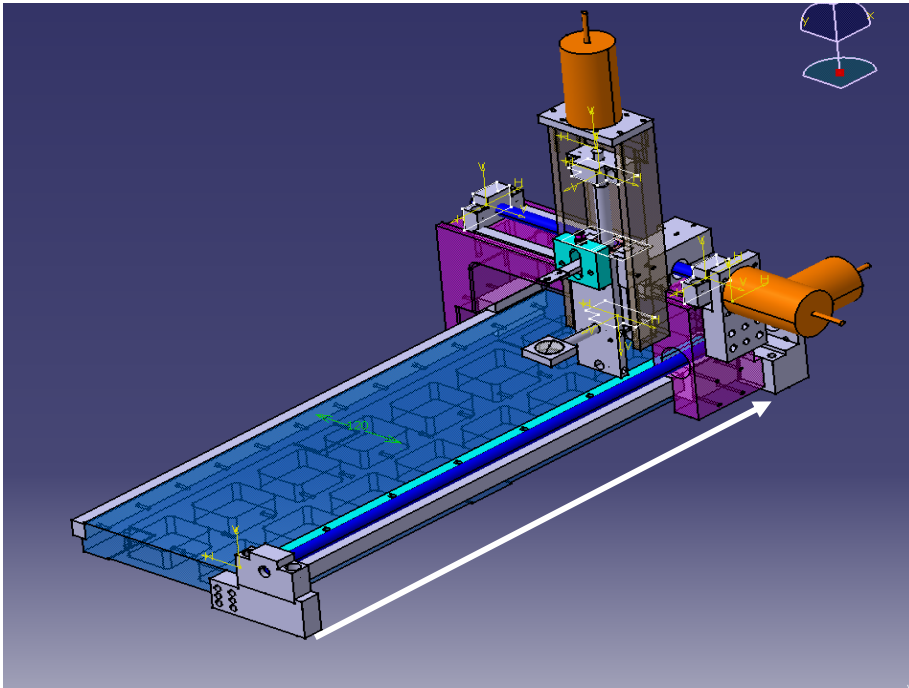


Fig. 2. CATIA CAD design of the 3D table

The photograph of the 3D Table is shown in Figure 3 here below. In the test beam only two directions are used: the one in height and the one in the transversal direction with respect to the beam axis (white arrow in Fig 2 here above).



Fig. 3. Photograph of the 3D motorized Table

Another 3D table allowing moving larger size Silicon tracking prototypes will be at disposal in summer 2008. It is under construction at University of Torino/Torino-INFN (Figure 4)

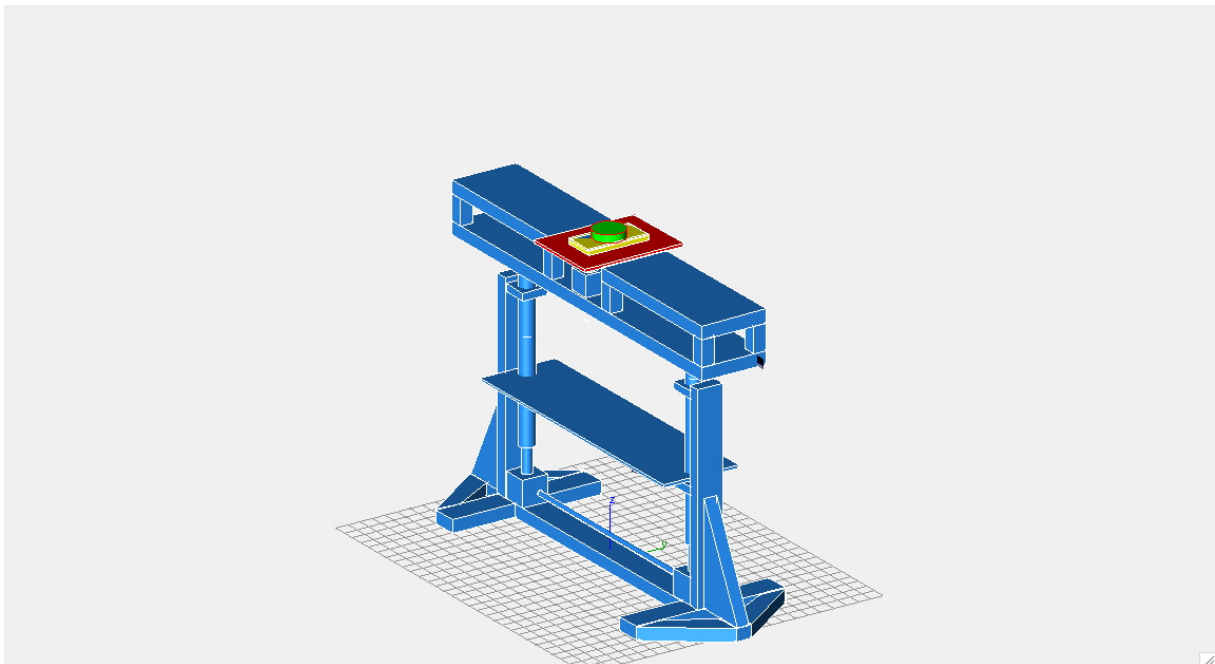


Fig. 4. 3D table in construction at Torino for larger dimension Silicon prototypes

It consists of:

- the base
- the platform that could be moved in vertical, ($\pm 20\text{cm}$), and transverse to the beam ($\pm 10\text{cm}$) to align the hodoscopes and scintillators to the beam line

- on the platform we will support the hodoscopes, fixed, and allow the Detectors Under Test (DUT) to be aligned and displaced with respect to the hodoscopes.

- the center of the platform has 3 movements:

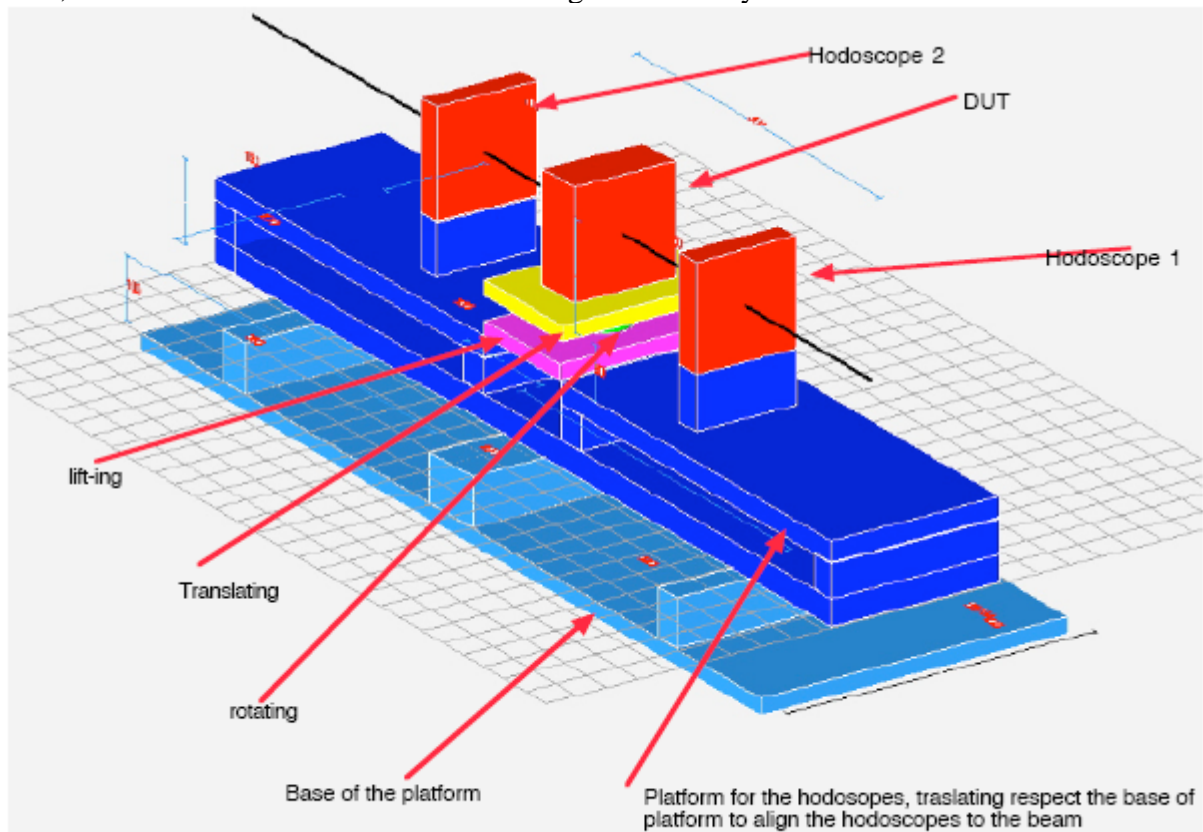
- . Z, vertical, to align the sensors vertically with respect to the beam in different positions
- . Y, transverse to the beam
- . phi, rotation around Z

The platform has dimensions (X,Y,Z) of 150x27x4.5 cm³. We will use element of basic profile system by BOSCH-REXROTH, that allow to align easily.

The idea is to be flexible enough to allow any kind of DUT, from 4 x 15 x 15cm³ to 20 x 40 x 20 cm³.

The DUT is mounted on top of a rotating head that could easily interfaced to any DUT size.

The details of the platform with the movable "head" part is shown in Figure 5 here below. In case, the "head" could be modified according the necessity.



The hodoscopes could be positioned along the platform in any positions

Fig. 5: Details of the platform on which will be sitting the hodoscopes and the DUT

It will be ready for the test beam at CERN in October 2008.

Acknowledgement

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