CMM Update

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- Where are we and what we need in the next year or so?

- Surveying the different components

CMM Measurement Plan at LBL

Introduction

These are some notes on the goals and tasks associated with the Survey of the Pixel detector and related support hardware like the prototype fixture.

Goals

The goals are:
1. Test-drive and machine and measure actual resolutions
2. Become familiar with the output. Prepare code to manipulate it and transform it to a 'standard' format (common to all subsystems)
3. Survey the *Prototype Fixture* and enter it into the Database
4. Build and Survey a prototype Pixel *Sector*. Depending on result decide on best Db-representation scheme. Decide on data density/volume per sector. Assess possible variations until Shell is installed *in-situ* due to transportation/handling.

Measurements

In order to achieve the above goals the following measurements are proposed to be performed at LBL some time soon. Please feel free to comment.

1. Survey a flat Silicon disk (300 or 50 um) with the Camera and with the Touch Probe when available. This relates to goals 1) and 2) above.
2. Survey a couple of spherical and rectangular objects several times. This also relates to goals 1) and 2) above.
3. Survey the *Prototype Fixture.* Then, analyze the data and enter it in the Db.
4. Survey a prototype Pixel *Sector.* If possible, simulate transportation/installation stresses/fatigue and re-survey it. Compare outputs, estimate margins and enter the data in the Db

Development of spatial map-Tools (2)

ZEISS: touch probe 2-3 μm (xyz) and visual 2-3 μm (xy) 50 μm (z)
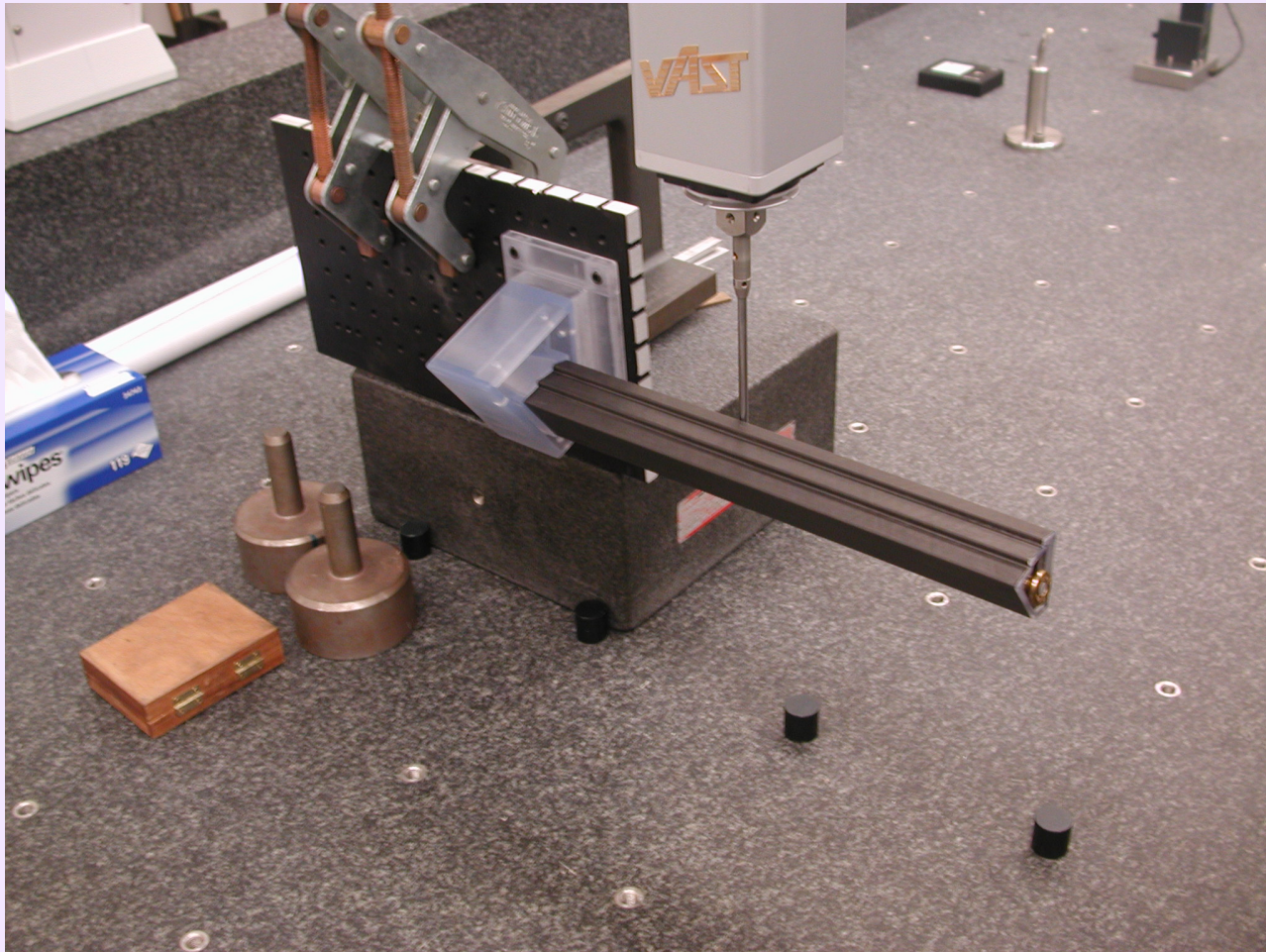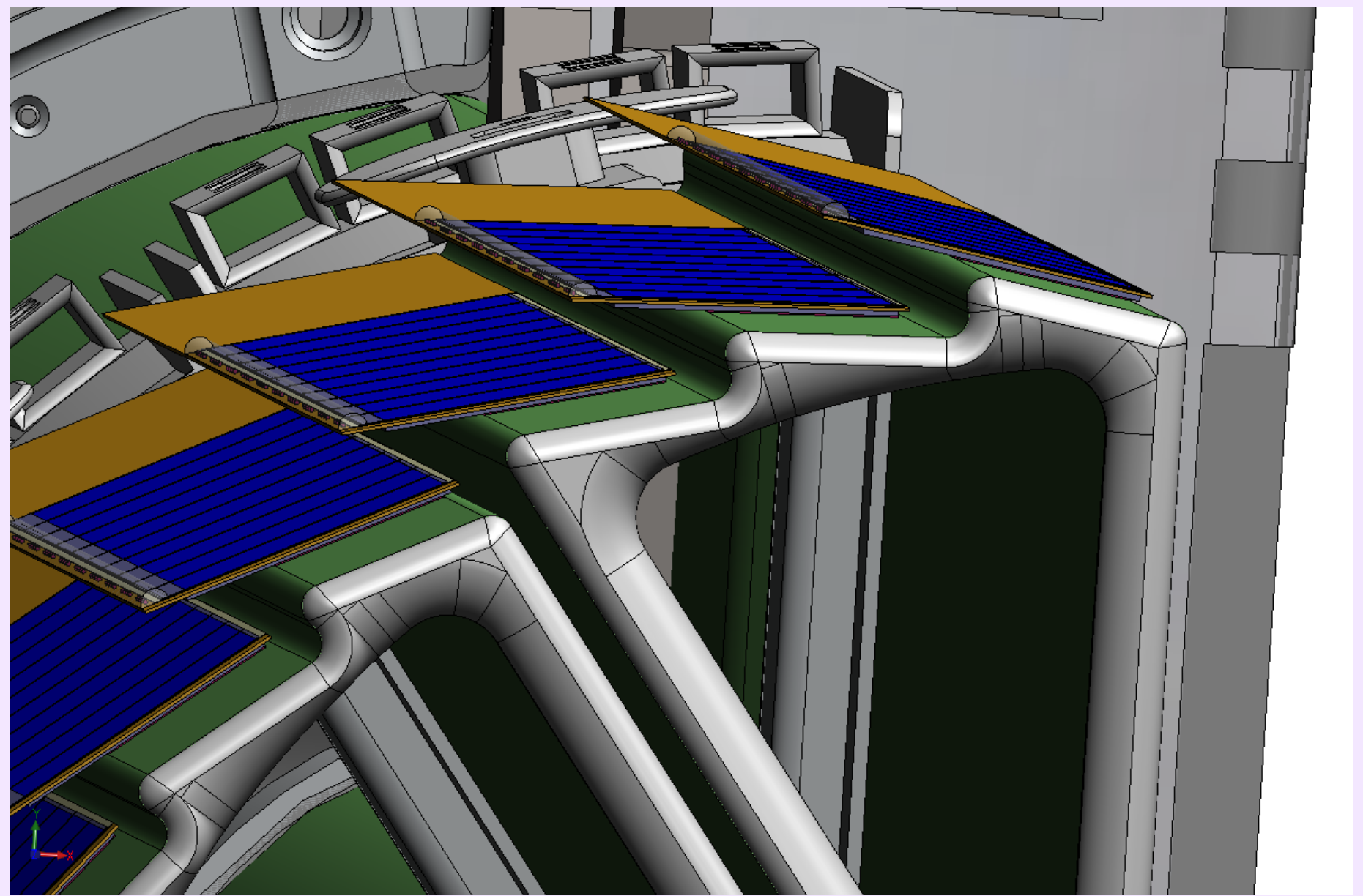
active volume: huge (SSD/IST)

VIEW-300:visual sub micron (xyz) repeatability 5 μm accuracy over active volume
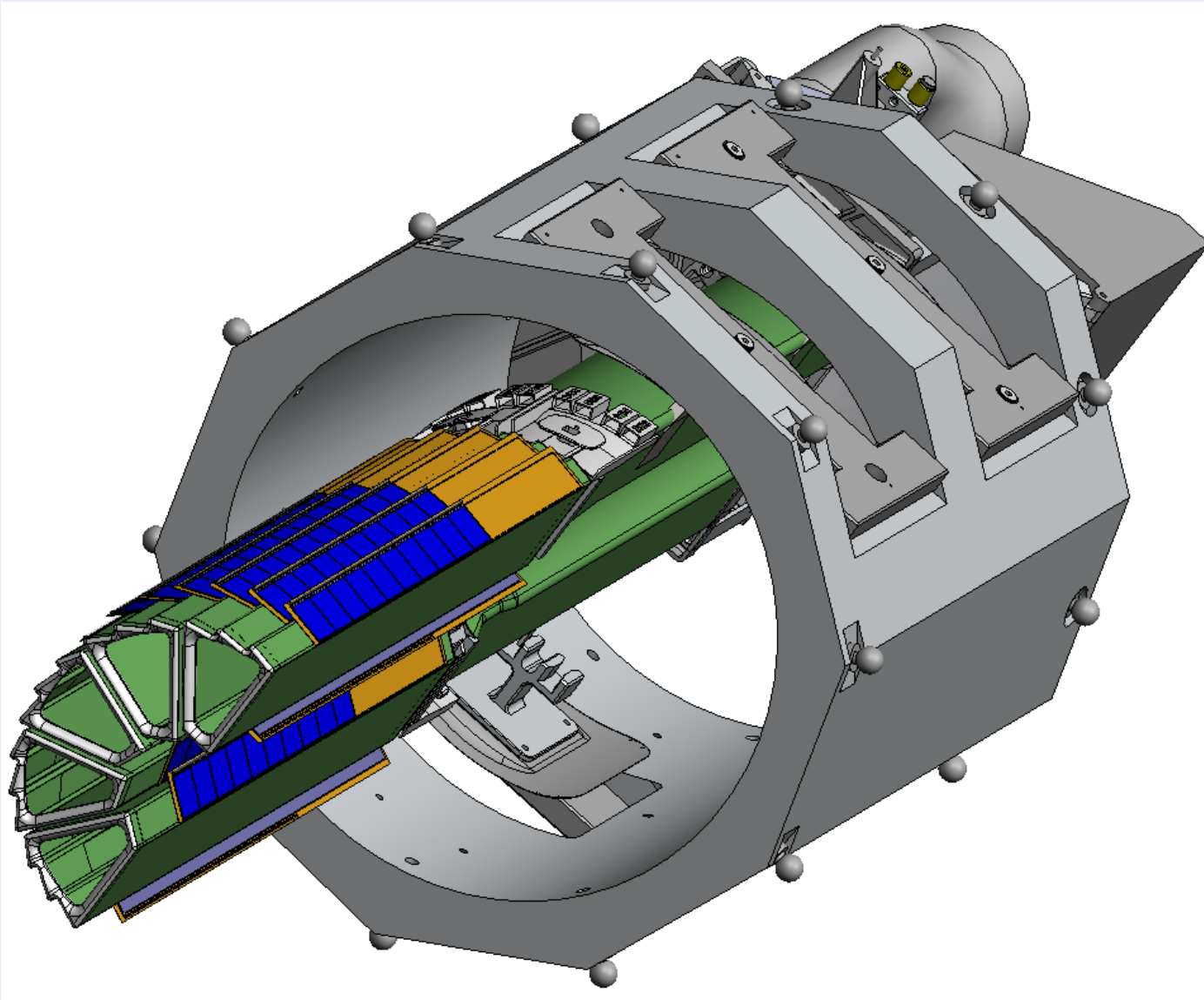
no touch probe (coming!)

active volume:
30 in X 30 in X 12 in (PXL)

We want something like this with the chips glued on

Prototype fixture...also used for supporting half cylinder for CMM mapping of PIXEL surfaces

Summary

- We are pretty familiar with the ZEISS machine and its measurements.
  - We still need to streamline the data translation code and put it in a final (CVS) place
  - The SSD/IST survey straightforward, but it has to happen sometime in the next 1-1.5 years.

- We are about to start playing with the VIEW 3000

- Manpower involved is still thin but finite.