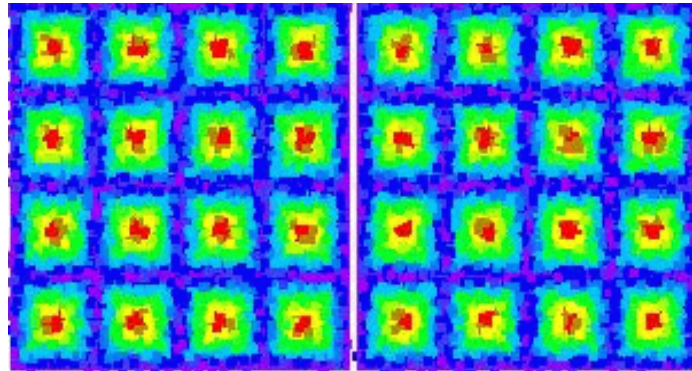# What? Where How?
Description of the Geometry
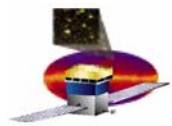

Anders W. Borgland

SLAC

Instrument Analysis Workshop 1

SLAC, June 7, 2004

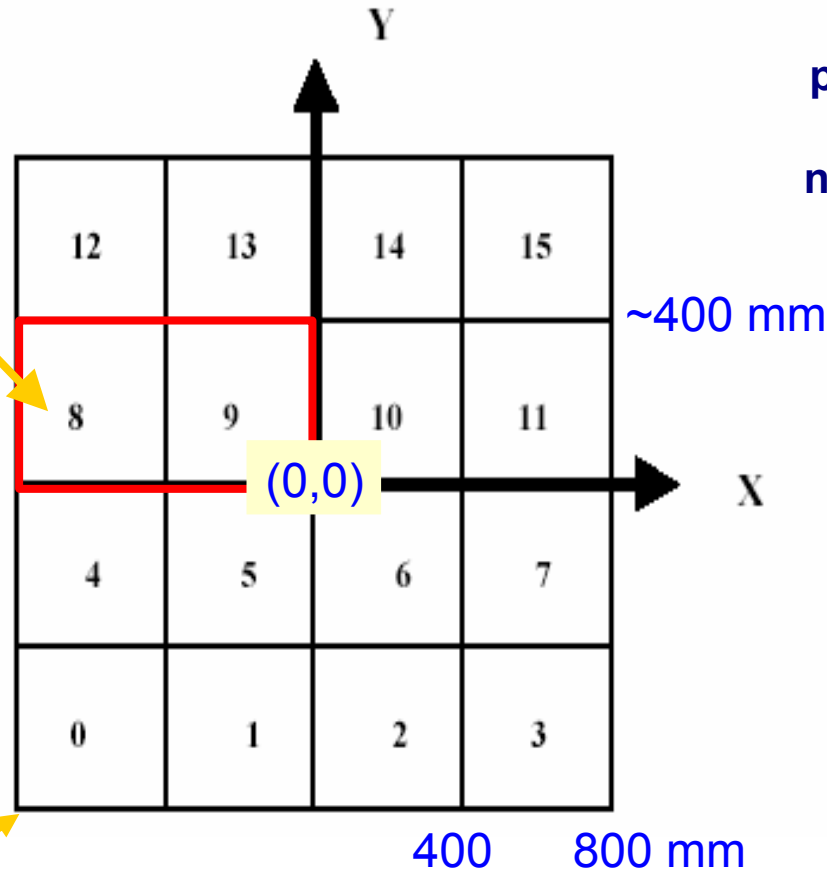# Two towers

Viewed from the front, looking backward, the towers are numbered from the lower to higher values along X and Y, as illustrated below.

**Both towers should have**
positive Y coordinates and
negative X coordinates in the ntuples

These numbers – 8,9 – correspond to the value in the variable GltTower

12	13	14	15
8	9	10	11
4	5	6	7
0	1	2	3

~400 mm

(0,0)

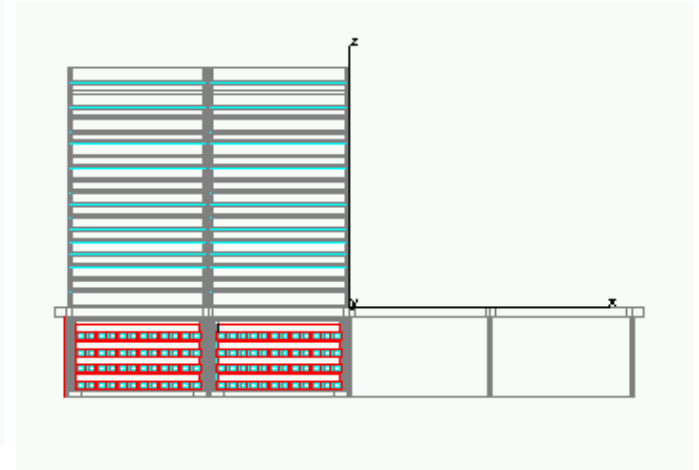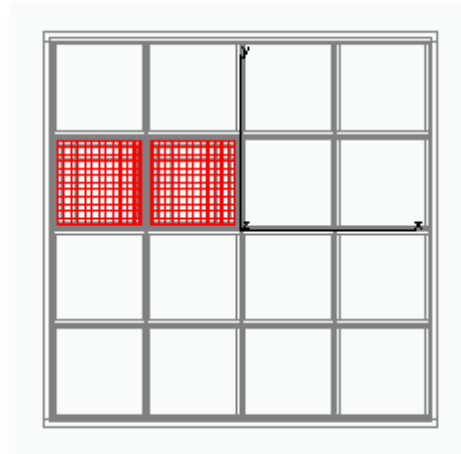**For developers: Towers are in SAS GRID positions (X_xml, Y_xml)=(0,2),(1,2) (cf XML files and README, lower left corner is SAS GRID position (0,0))**

400   800 mm

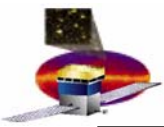From LAT Coordinate System LAT-TD-00035
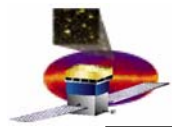
The two towers are really there ….

From the event display:

This talk:

- **Where** to find useful and relevant **geometry information.**
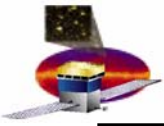- **How** to use the **event displays** to access geometry information.

Where and what?

- **Geometry information** can be found in XML files in the package **xmlGeoDB.**

- Geometry here means:
    - **Geometry** i.e. how many, how wide etc.
    - **Material** characteristics and composition.
    - **Configuration** i.e. detector **thresholds** like
        - cal.zeroSupressEnergy
        - Tkr.trigThreshold

- **SAS** and **subsystems** are currently working on verifying and updating these numbers:
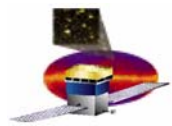   - LAT-TD-03674-01

Where to find geometry information?

- **Release: EngineeringModel with cvs tag v2r0402p4**

- **Two towers specific information (actual position of the two towers etc):**
  - **xmlGeoDB/xml/latAssembly/2TowerSection.xml**

- **'Everything' else:**
  - **xmlGeoDB/xml/latAssembly/2TowerSegVols.xml**
  - **Dimension of CAL diodes are still the same, so ….**

- **The file just contains softlinks to xmlGeoDB/xml/flight/*.xml**

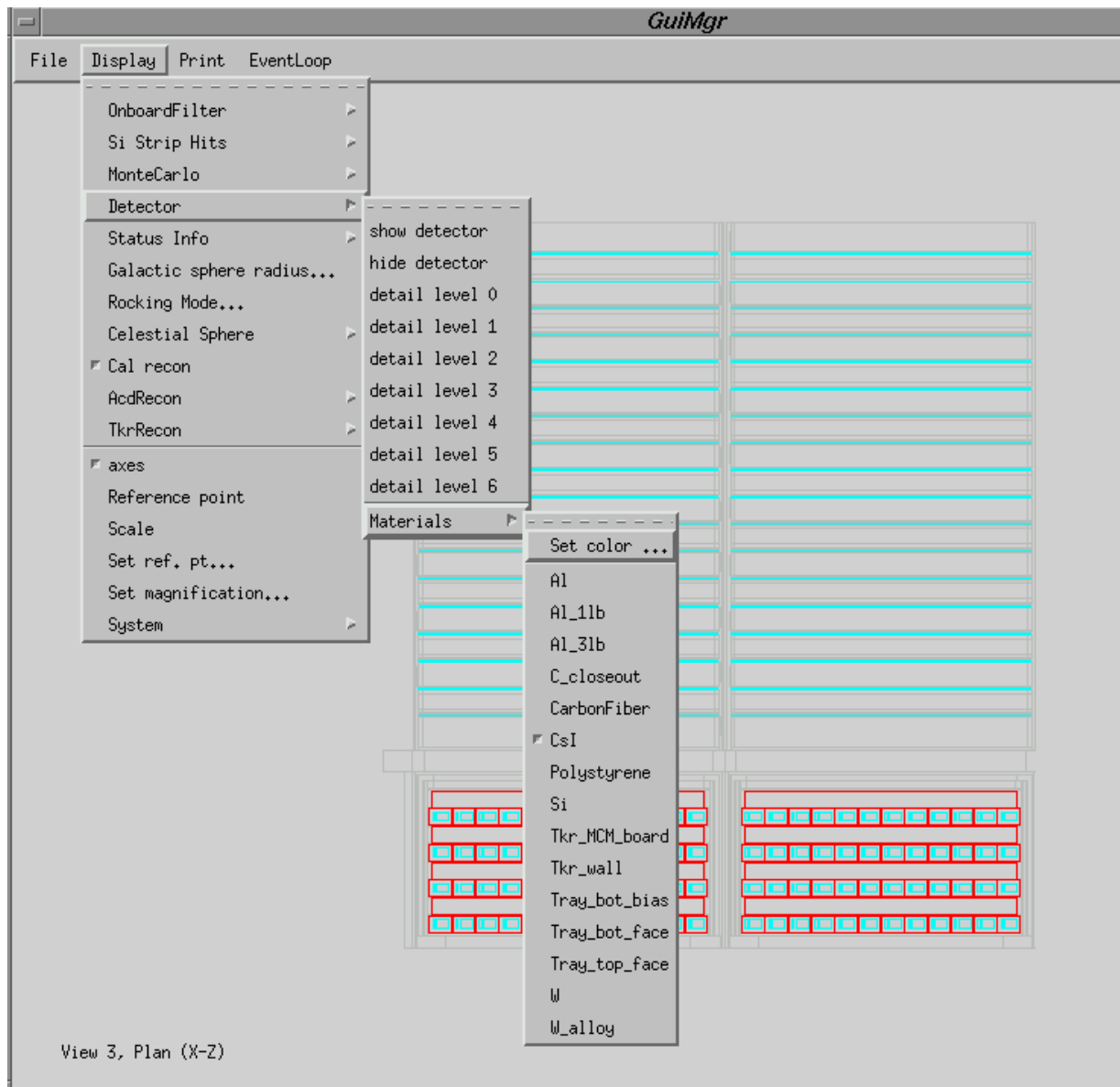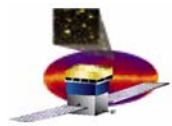- **Material characteristics and composition:**
  - **xmlGeoDB/xml/materials.xml**

The Event Displays

- **Looking at xml files can be fun, but …..**

- **We can also use event displays – both the GLAST Event Display and FRED – to access and look at geometry information.**

- **Examples in this talk:**
  - **The CAL diodes**
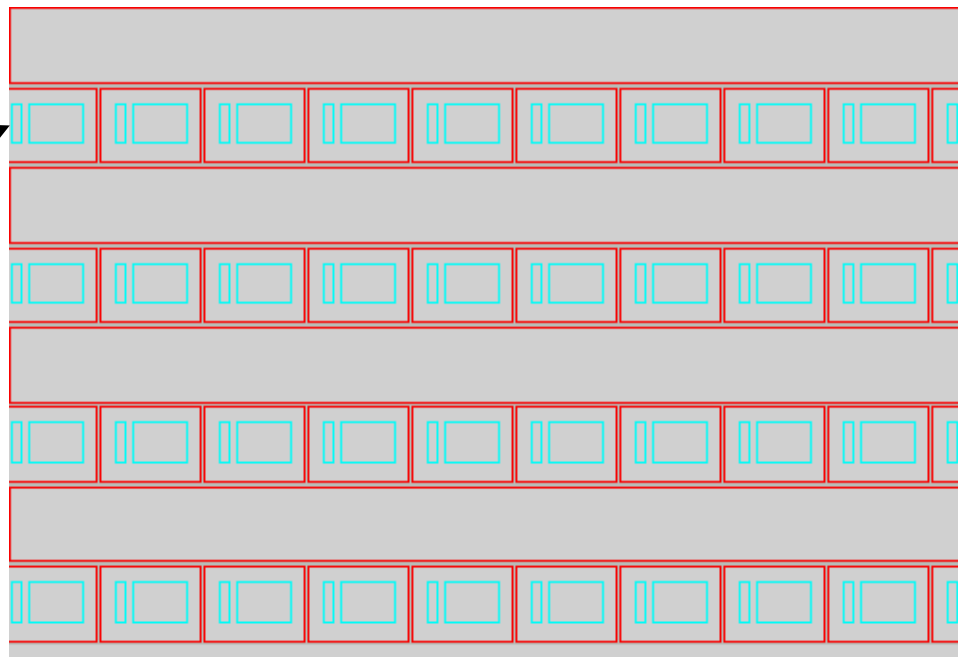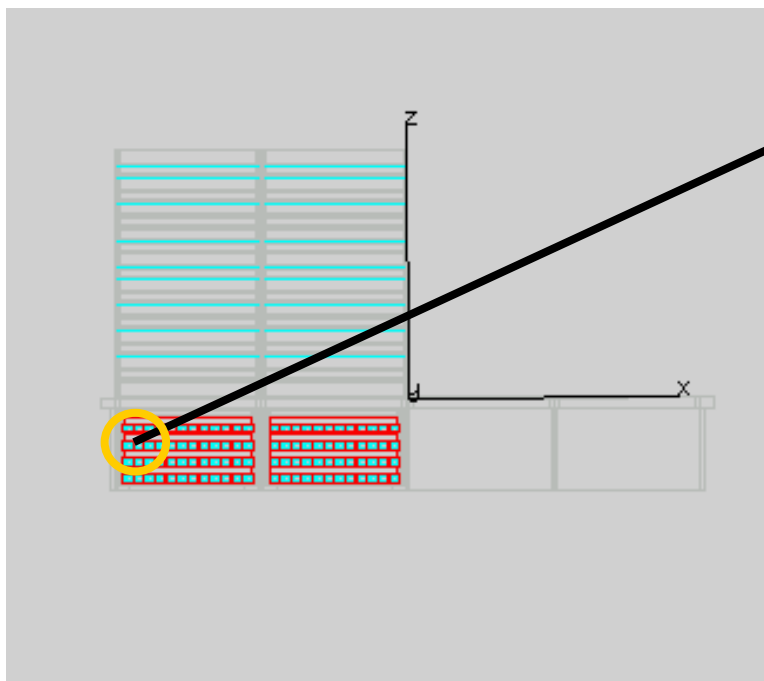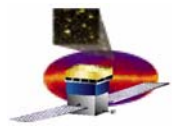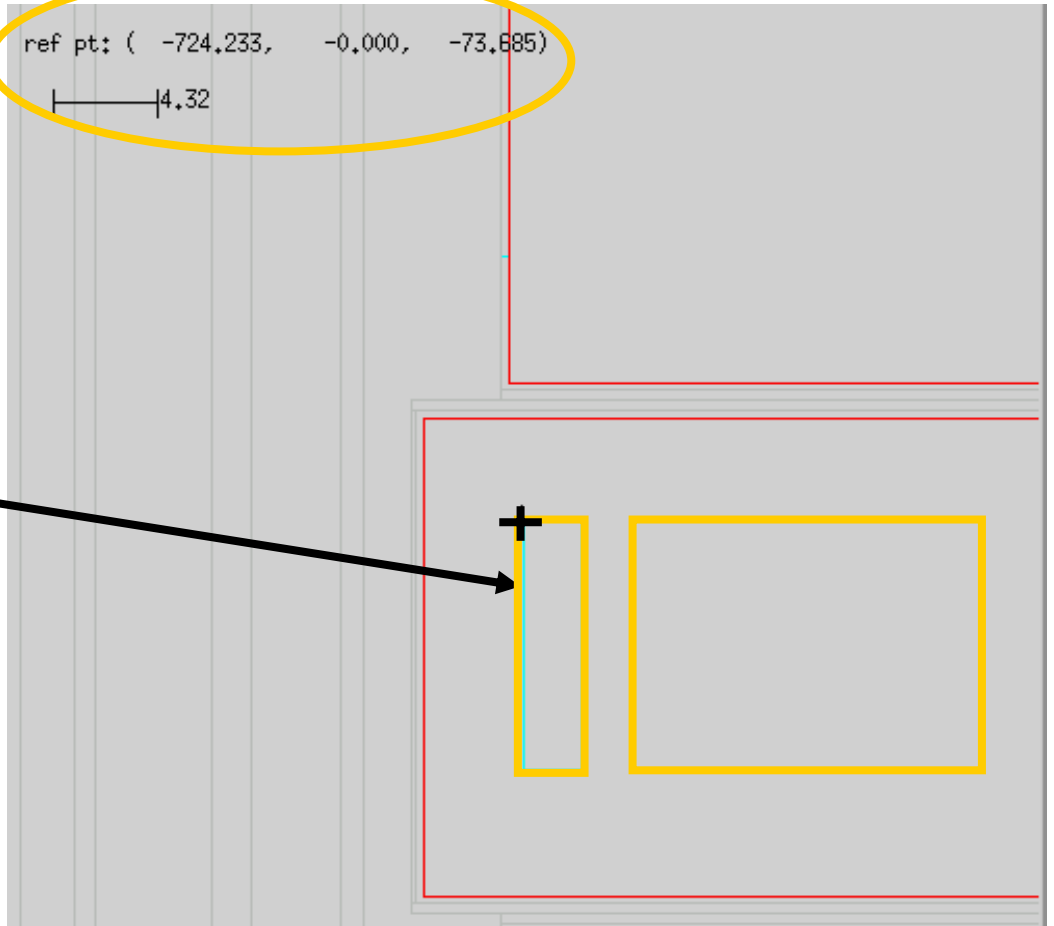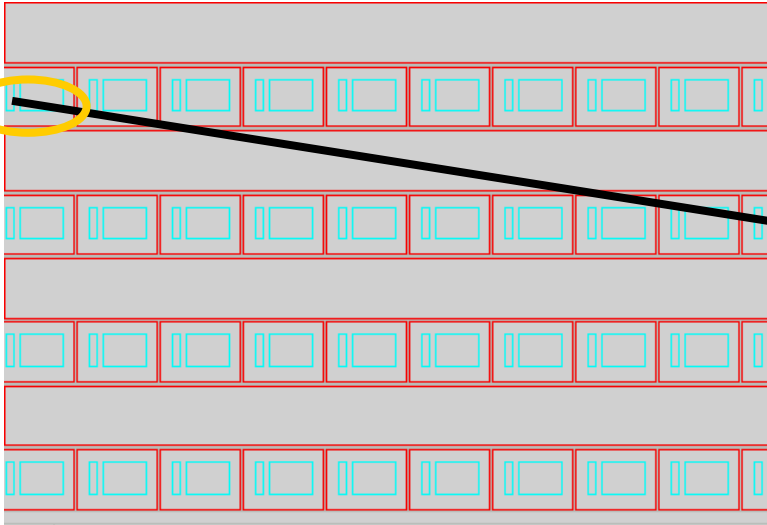 - **The tracker Multi-Chip Modules**
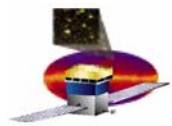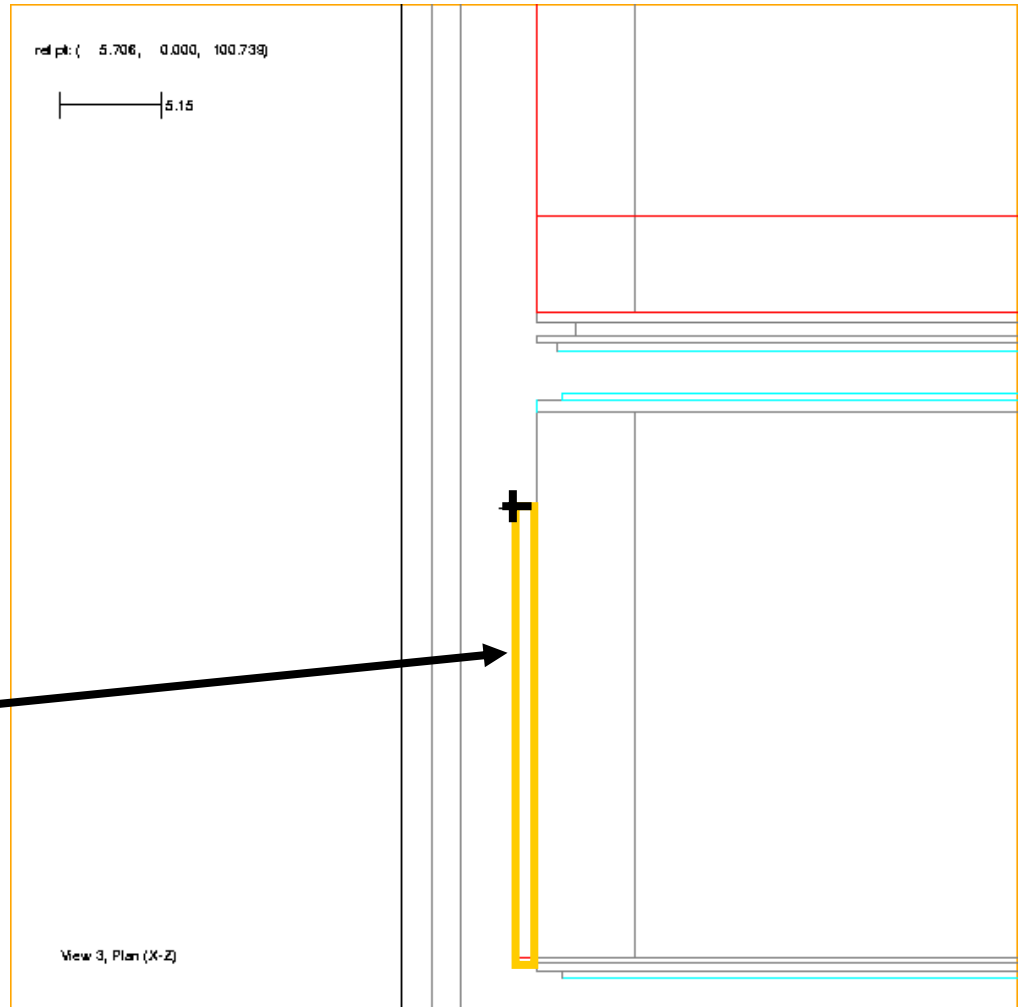 - **Overall dimensions**

The GLAST Event Display

The CAL diodes

The CAL diodes cont'

ref pt: (-724.233, -0.000, -73.685)

|4.32

xmlGeoDB/xml/flight/CALDimPrim.xml

Tracker Multi-Chip Module (MCM)

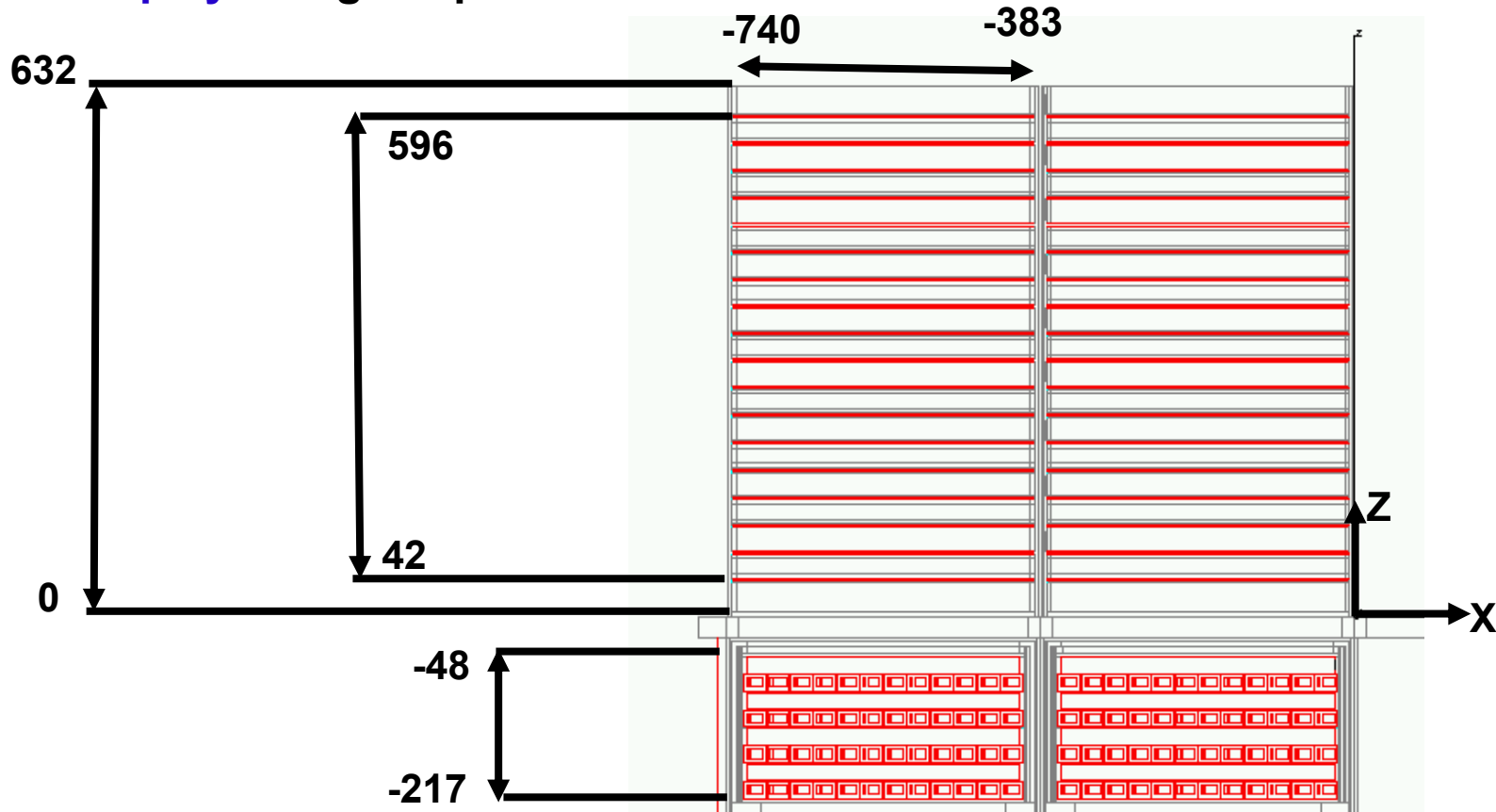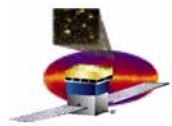**xmlGeoDB/xml/flight/TKRDimPrim.xml**
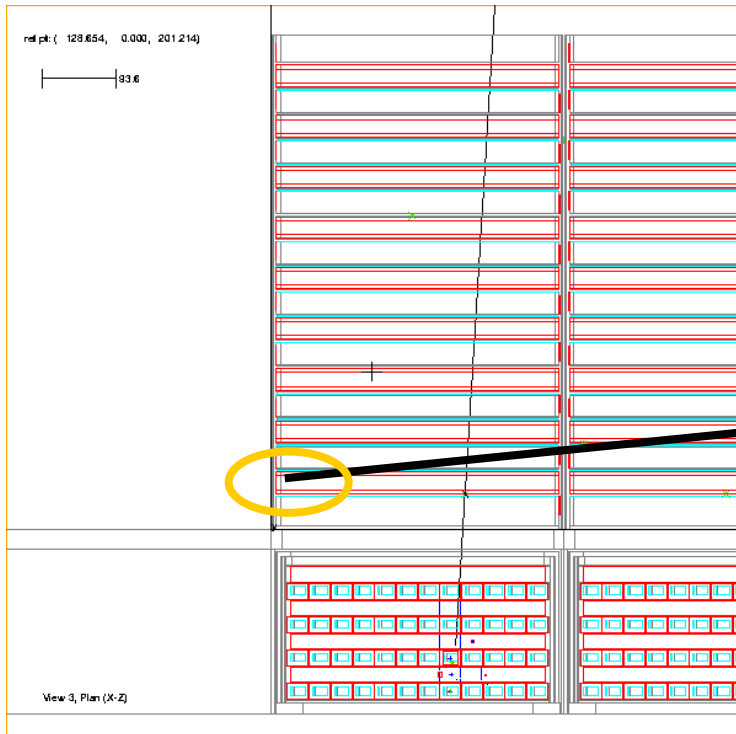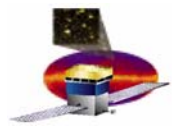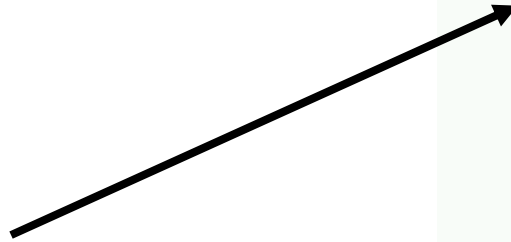
Tower dimensions X-Z (in mm)

**Approximate dimensions from the
event display using set points:**

View 3, Plan (X-Z)

Zoom

Use set points after zooming in!
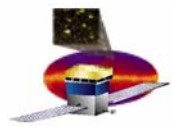
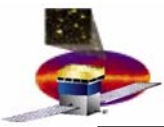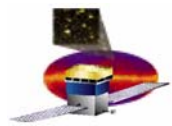# (Approximate) Tower dimensions Z-Y (in mm)
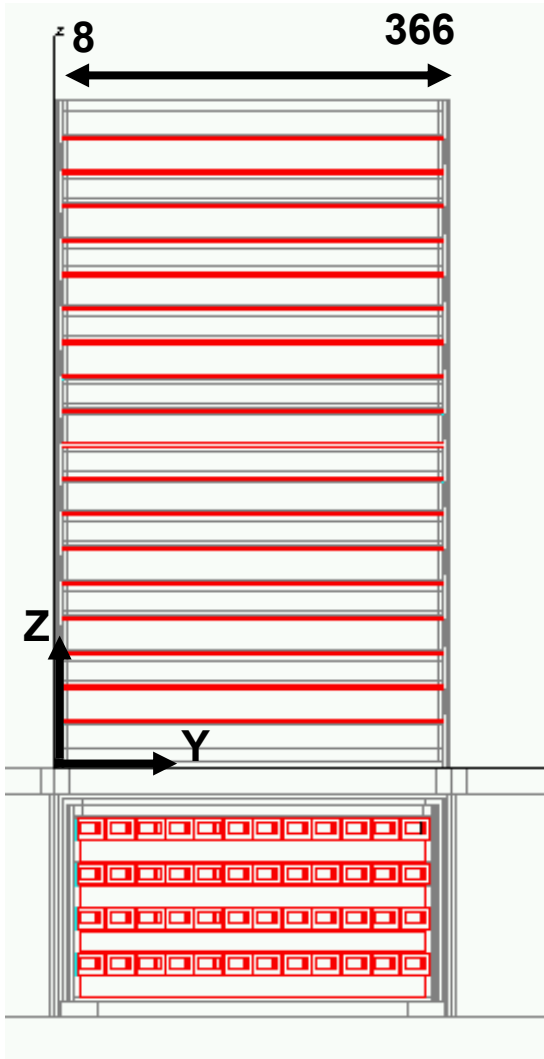
These numbers are only approximations found by using set points in the GUI.
For the correct/precise dimensions, look in the **xml files**, in the new and updated document **LAT-TD-03674-01** or …..

FRED

- **FRED** is a new event display – see Riccardo's talk later today!

- Can load a 225kB **xml file** (made by a separate application) with all the **geometry** for the two towers.

- Can look at **offline** and **independently** of **Gleam** and **GlastRelease**.

- **Easy to access** geometry the information:
  - **Click** on the element (like the CAL diode) in the HepRep instance tree.
  - **Dimensions, composition etc** come up automatically i.e. no need for 'reference' points (and zooming) like with the old GUI.
  - Element is **colour highlighted** in the event display.

FRED

diodeL

XML
info
here!
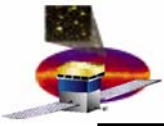
Conclusion

- **SAS** and the **subsystems** are currently **verifying and updating** the geometry information: **LAT-TD-03674-01**

- **Digging** in **xml** files to get to the geometry is fun, but …. looking at **event displays** is sometimes a good alternative.

- **Checking out FRED may be worth while** ☺