Subject: Re: AGATA Crystal positions (Look-Up Table)
Posted by Damian Ralet on Sat, 21 Mar 2015 10:25:49 GMT
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Dear All,

Just a little update concerning the positions of the detectors. If you have any questions, please let me know.

Convention
I use the same convention as given in the mechanical report. THe beam is along the Y axis. The X is horizontal. The referential is direct.

Radial distance
I started to check the same thing as Oliver, i.e. the radial distances of the detector. Previously Oliver mention that the distance were different for the crystal. If we look at the systematic as a function of the crystal position in the X-Z plane (perpendicular to Y axis, the beam). The histogram is in attachement, the color scal highlight the radial disance:

If I now shift the target center with the distance given in the report, we get a uniform radial distance, the difference in the color scale is in the order of 10^-4 mm. THe bin weights are taken here as the ratio of the corrected radial distance over the mean of the radial distance (after target repositioning).

Angles
If we know consider the spherical angle theta and phi. we can see a phi rotation of about 7 degree. The following figure highlights this rotation in the X-Z plane. The background histogram is the detector positions given in the crystalLookupTable, and the '+' dots are the measured positions. The 'x' are the measured positions after a rotation of 7 degree.

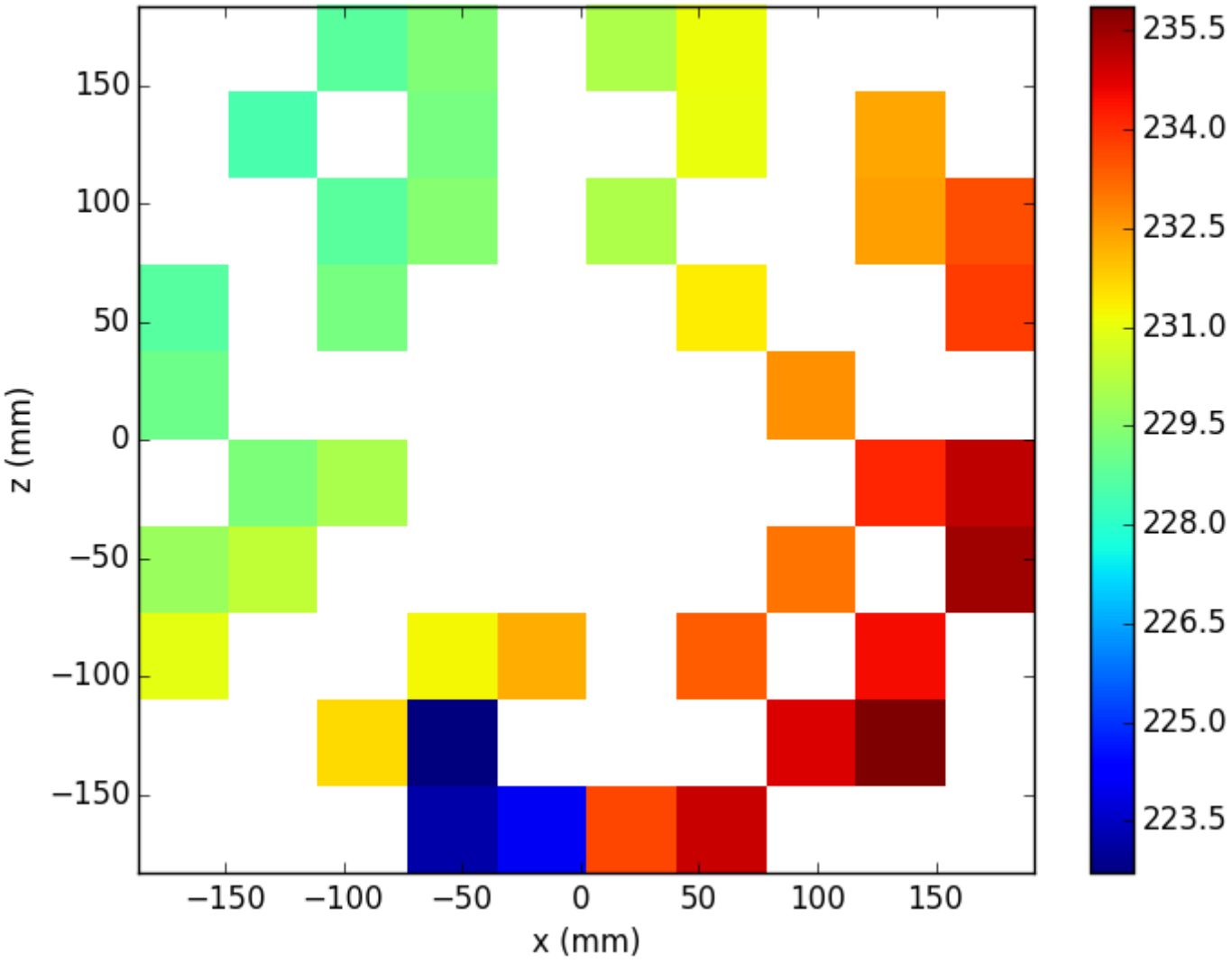
Conclusion
There is a rotation, and we need to adjust the frame positione properly in order to adjust our crystallookuptable to the measurement.

TODO
The angle of 7 degree is a visual estimation, I need to get sth more precise, even if a rotation of phi does not influence the Doppler correction.
The theta angle seem a bit off for the triple, while it look quite good for the double. There might be an other adjustement to perform.

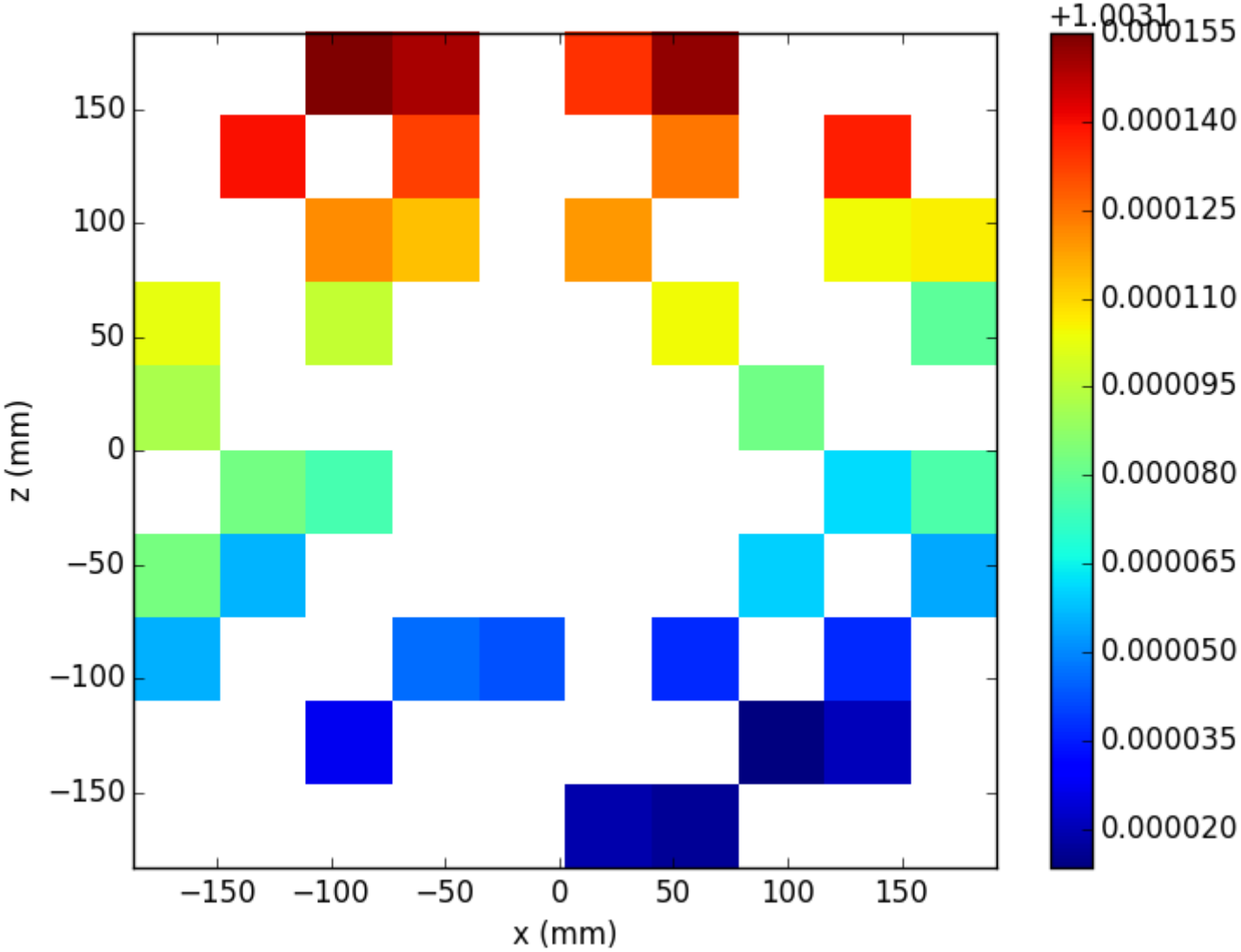
Cheers,
Damian

File Attachments

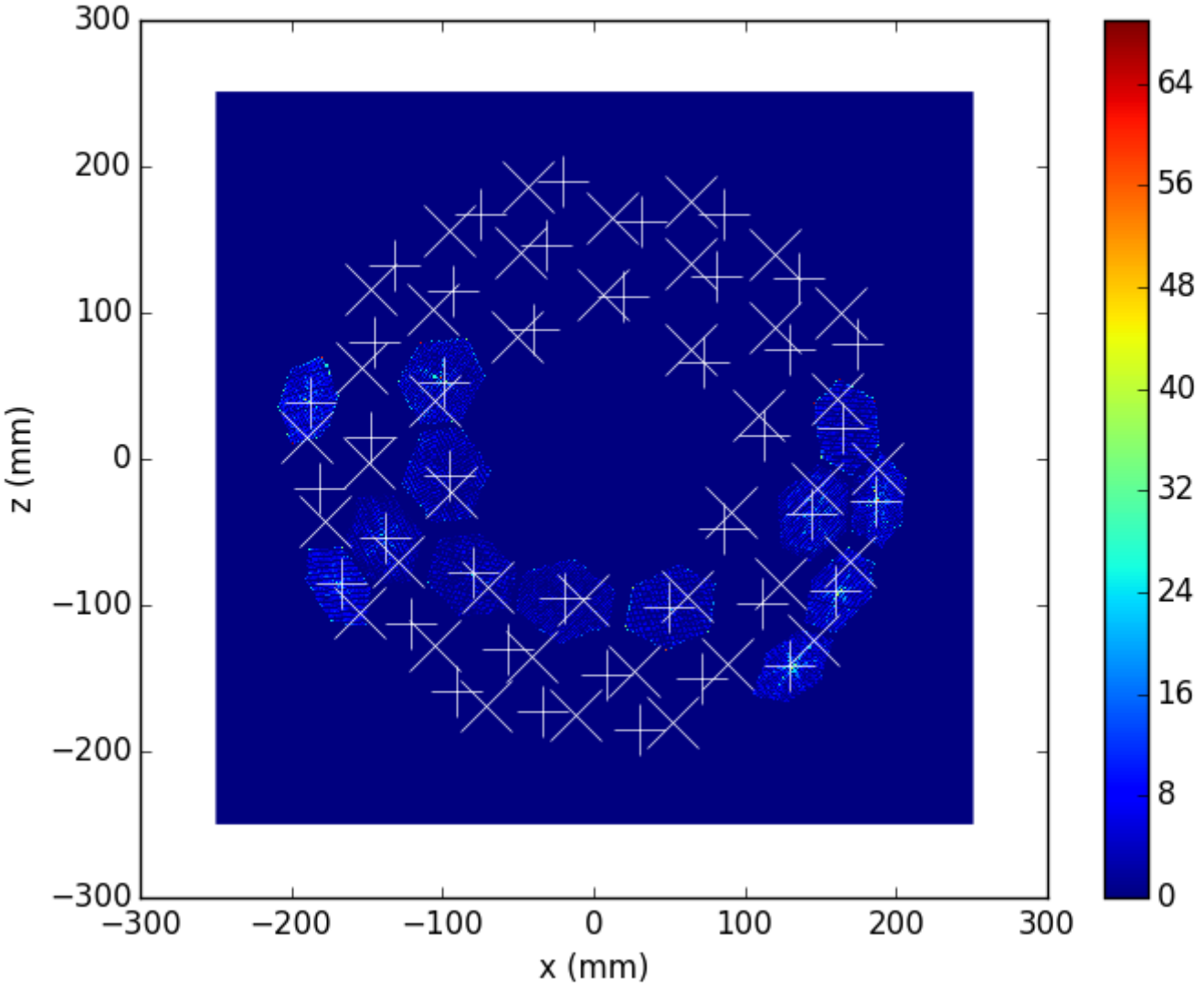
1) Radial distance_noCor.png, downloaded 1892 times



2) Radial distance_Cor.png, downloaded 1925 times



3) rotation_phi7.png, downloaded 1772 times


300
200
100
0
−100
−200
−300
z (mm)
−300
−200
−100
0
100
200
300
x (mm)
64
56
48
40
32
24
16
8
0