

# Preliminary images for FOXSI-3 Silicon detector – Active region targets

Science call – Sept 26 2018

# Timing (estimates)

One frame = 2 ms

HV started ramping up at +30 seconds after launch

Assume:

Observation started at +110 seconds after launch

Target exposure time:

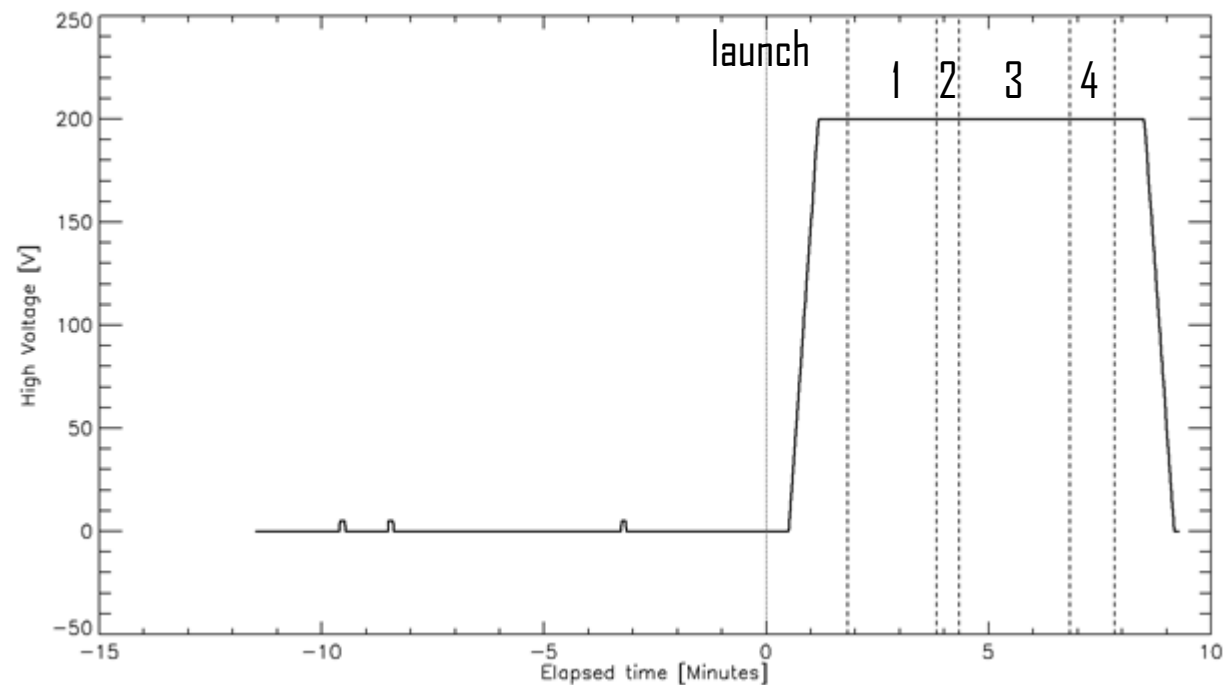
1 (AR): 120 seconds

2 (NP): 30 seconds

3 (QS): 150 seconds

4 (AR): 60 seconds

On the plot,  $t=0$  is launch



To select target, assume that we needed 4 seconds to point at the beginning of the target observation time and 2 seconds of uncertainty at the end → Exclude the 4 first seconds and the 2 last seconds of each target from analysis

In the following, focus on active region = target 1 + target 4

# Silicon images with level1 data: number of events

For each frame, check the error flag. If error flag is 0, the event is a “good event”, otherwise it is a “bad event”.

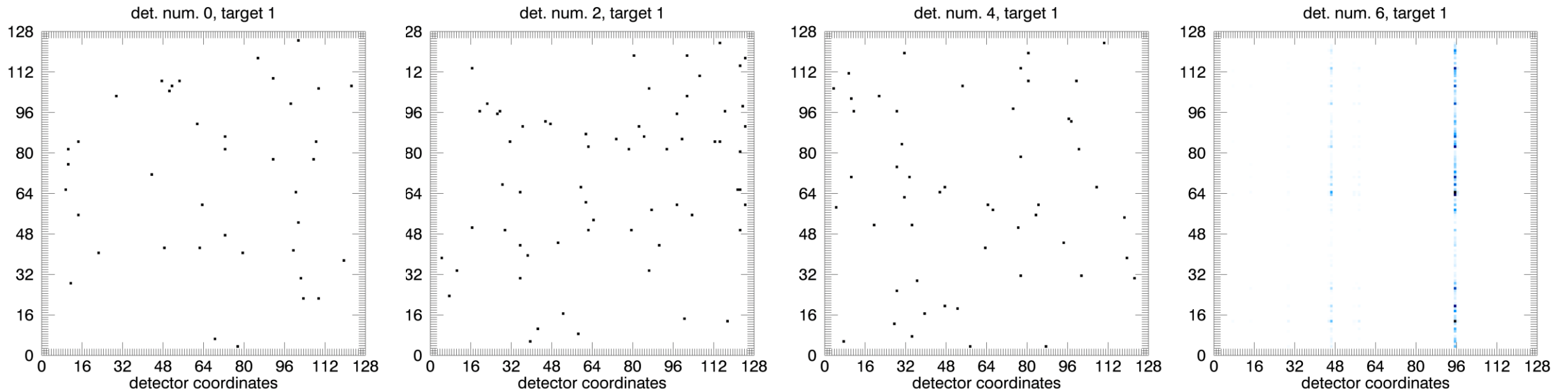
|             | Target 1    |            | Target 4    |            |
|-------------|-------------|------------|-------------|------------|
|             | Good events | Bad events | Good events | Bad events |
| Det. Pos. 0 | 39          | 144        | 21          | 61         |
| Det. Pos. 2 | 63          | 127        | 21          | 42         |
| Det. Pos. 4 | 51          | 83         | 18          | 37         |
| Det. Pos. 6 | 10918       | 11759      | 17482       | 7636       |

- Detector 6 is noisy
- Do we usually have that many “bad” events?

# Silicon images in detector coordinates

## With level1 data

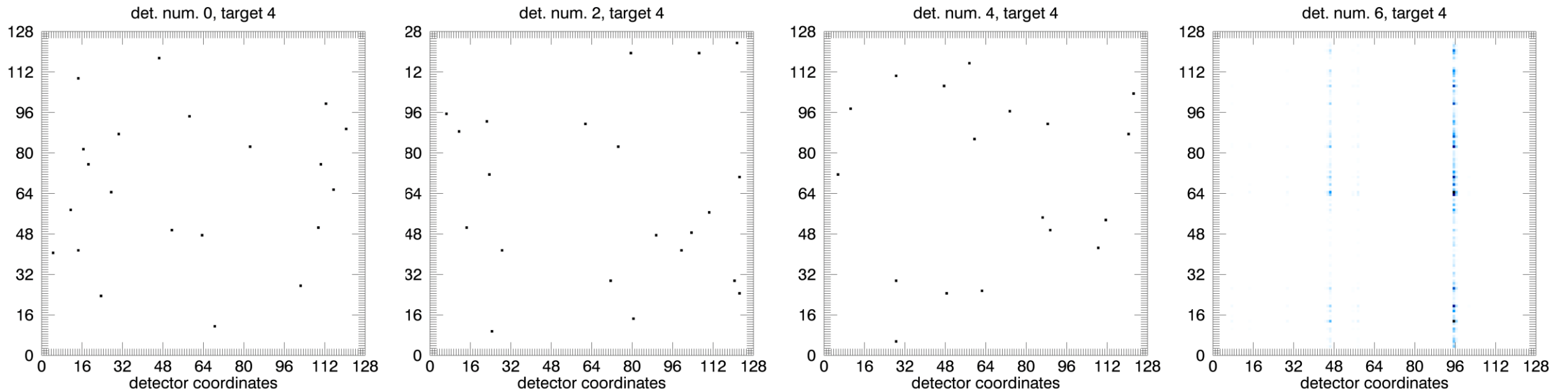
Target 1



# Silicon images in detector coordinates

## With level1 data

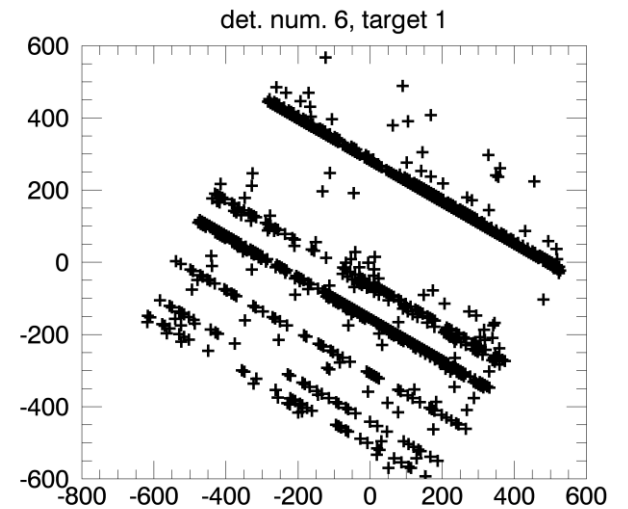
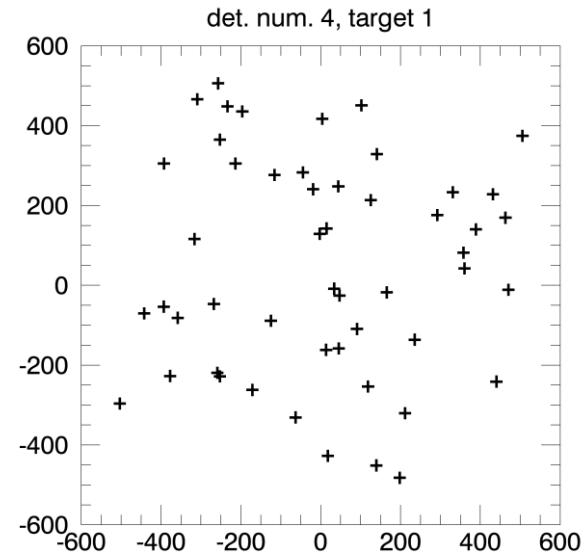
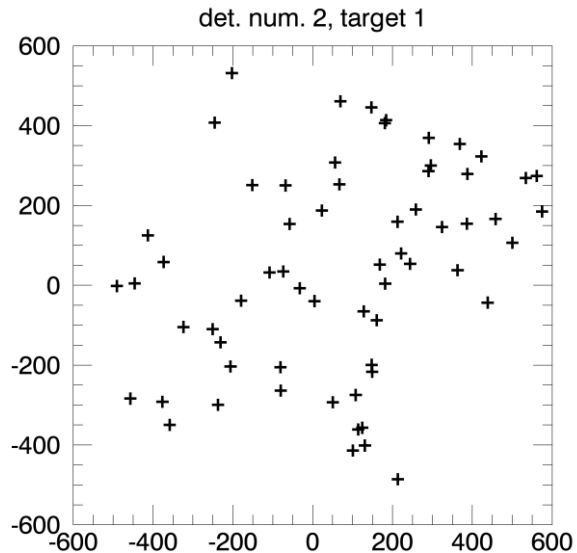
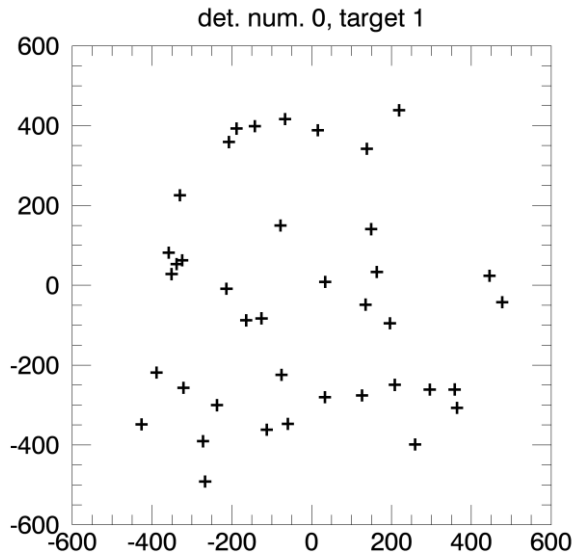
Target 4



# Silicon “images” in payload coordinates

## With level1 data

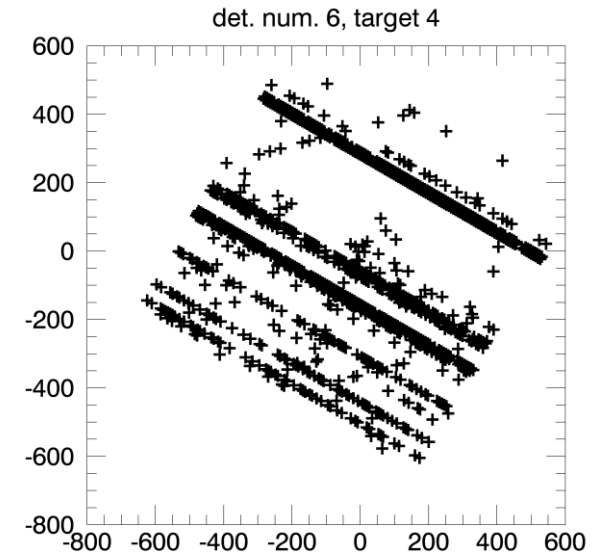
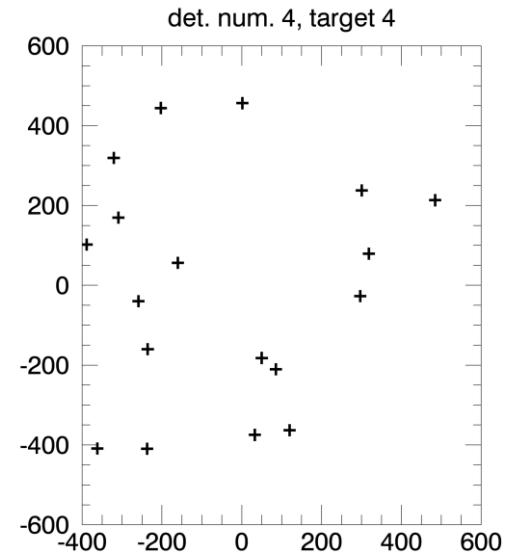
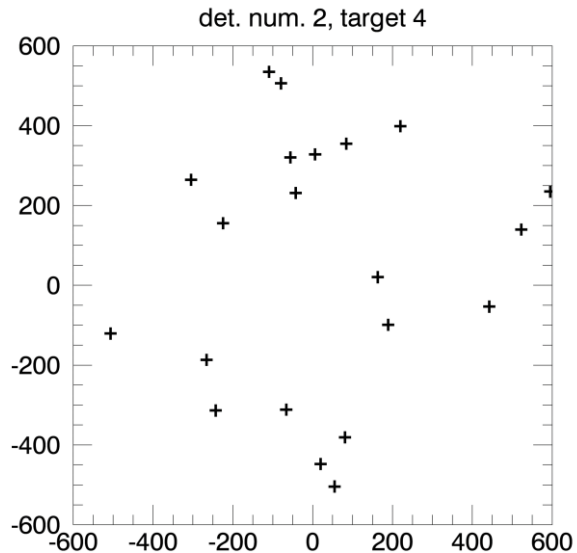
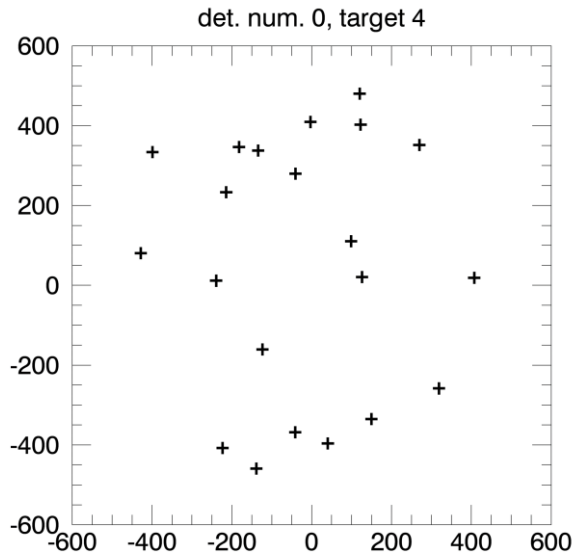
Target 1



# Silicon “images” in payload coordinates

## With level1 data

Target 1



# Next steps for active region analysis

## Immediate next steps for images:

- Check what are the error flags to know what are the sources of “bad” events (*Sophie*)
- Try to ignore noisy strips in det 6 data... other ideas? (*Sophie*)
- Do the same kind of analysis for CdTe = need to check the level0 to level1 procedure + geometry (*Sophie*)
- Level 2 data → We have to review our current energy calibration (*Sophie and Athiray*)

## Other next steps for images:

- Use statistical analysis to say what is the probability that the counts are randomly distributed (*Sophie*)

## Other next steps for active region analysis:

- Lightcurves → time binning and/or kernel density estimation (*Sophie?*)
- Spectroscopy (*UMN*)