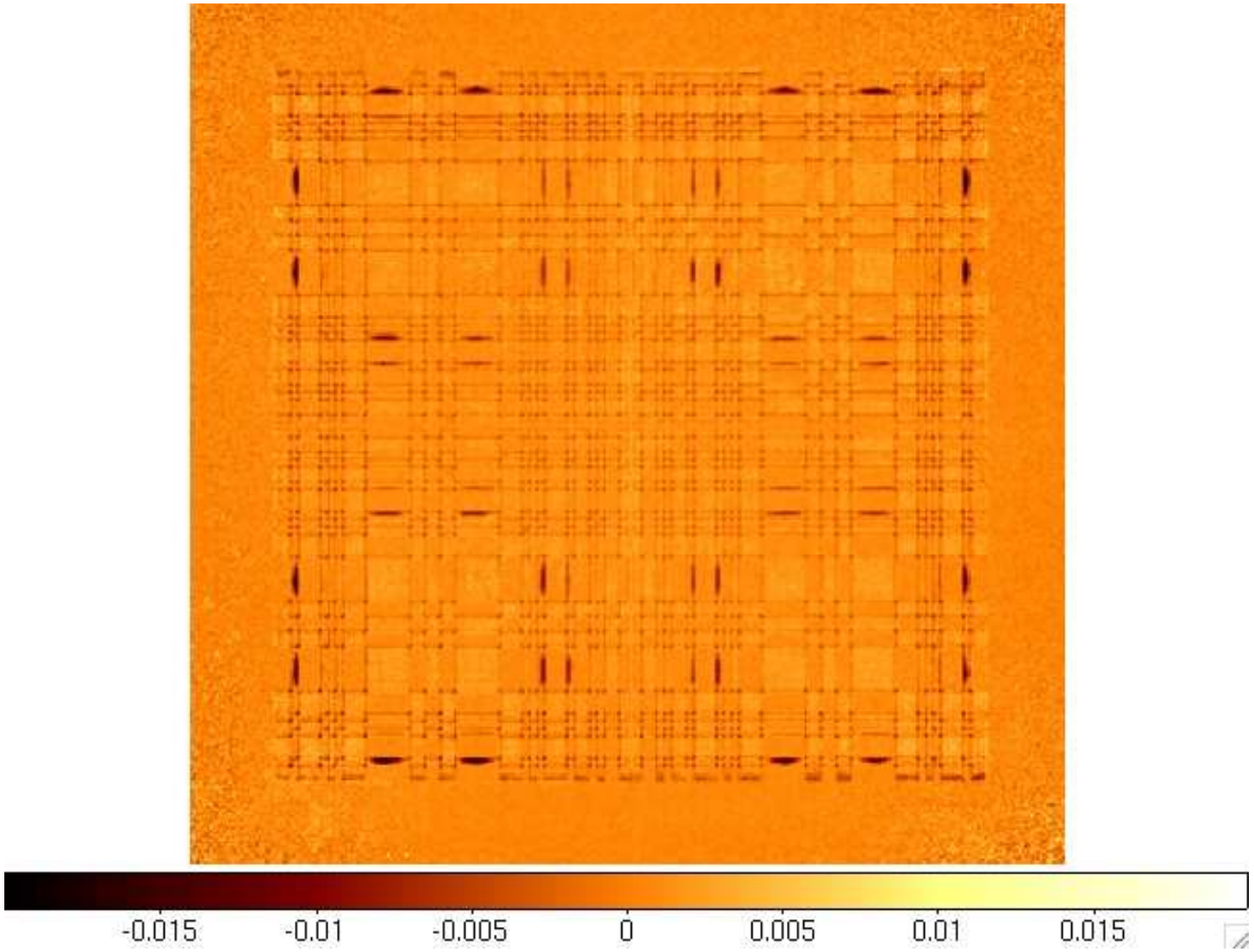
IBIS mask calibration

IBIS mask exposure today (unit: ks)

Mask corner	Crab	Cygnus X-1	Total
-y,-z	84	1000	1084
-y,+z	106	526	632
+y,+z	247	331	578
+y,-z	96	1332	1428

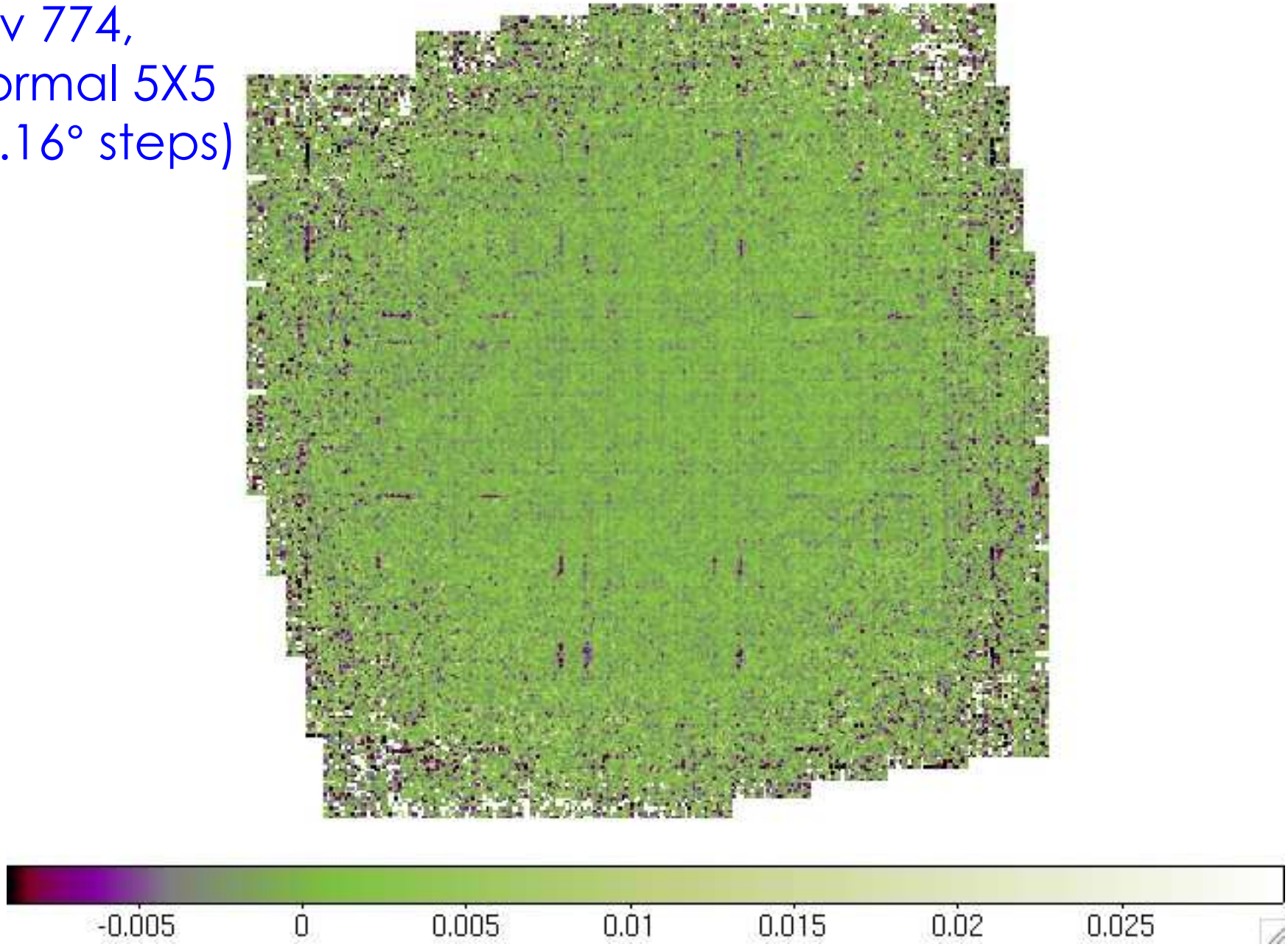
Cyg X-1+ Crab (up to rev 774)



Using Crab

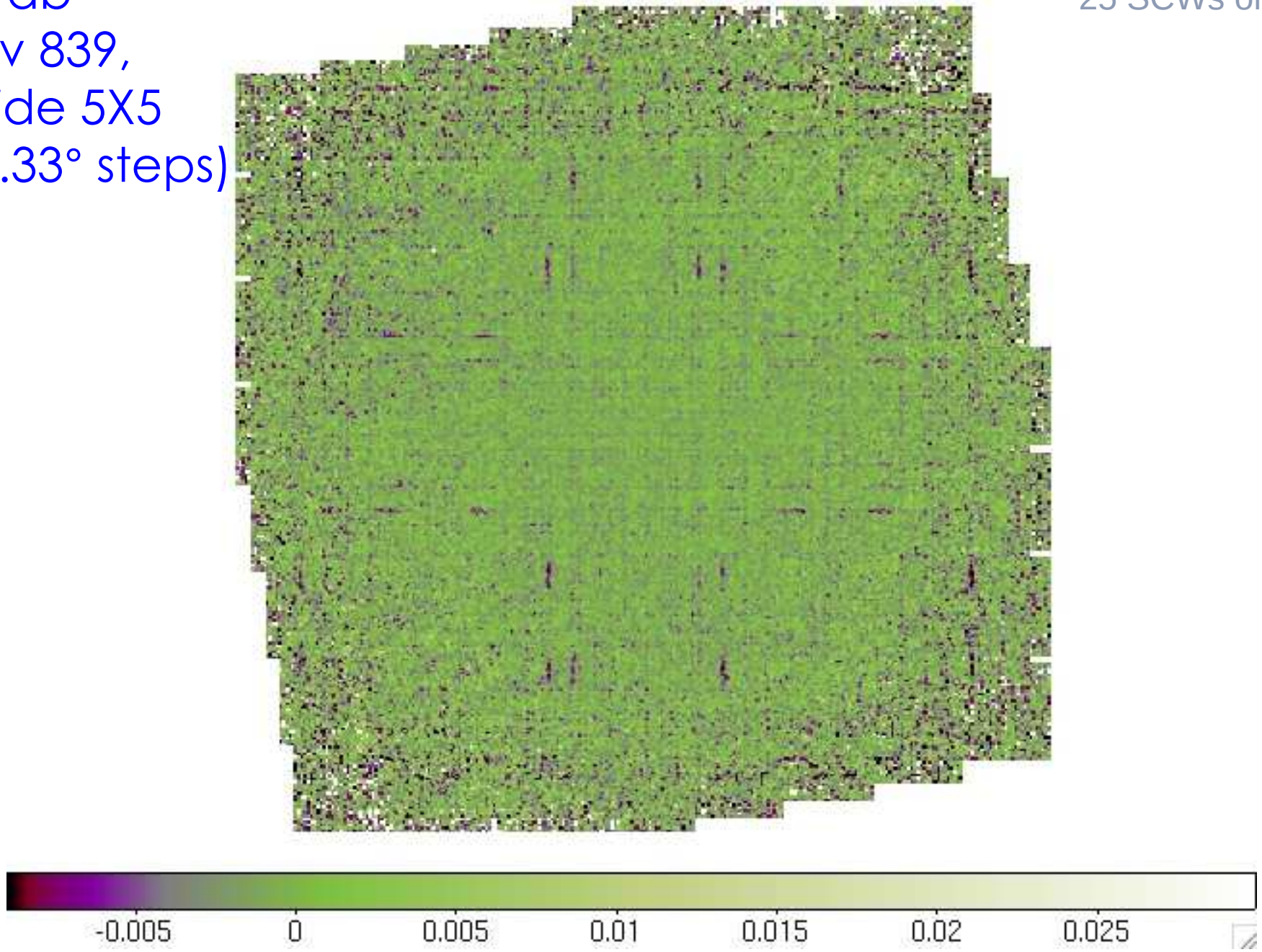
Crab
rev 774,
normal 5X5
(2.16° steps)

25 SCWs only



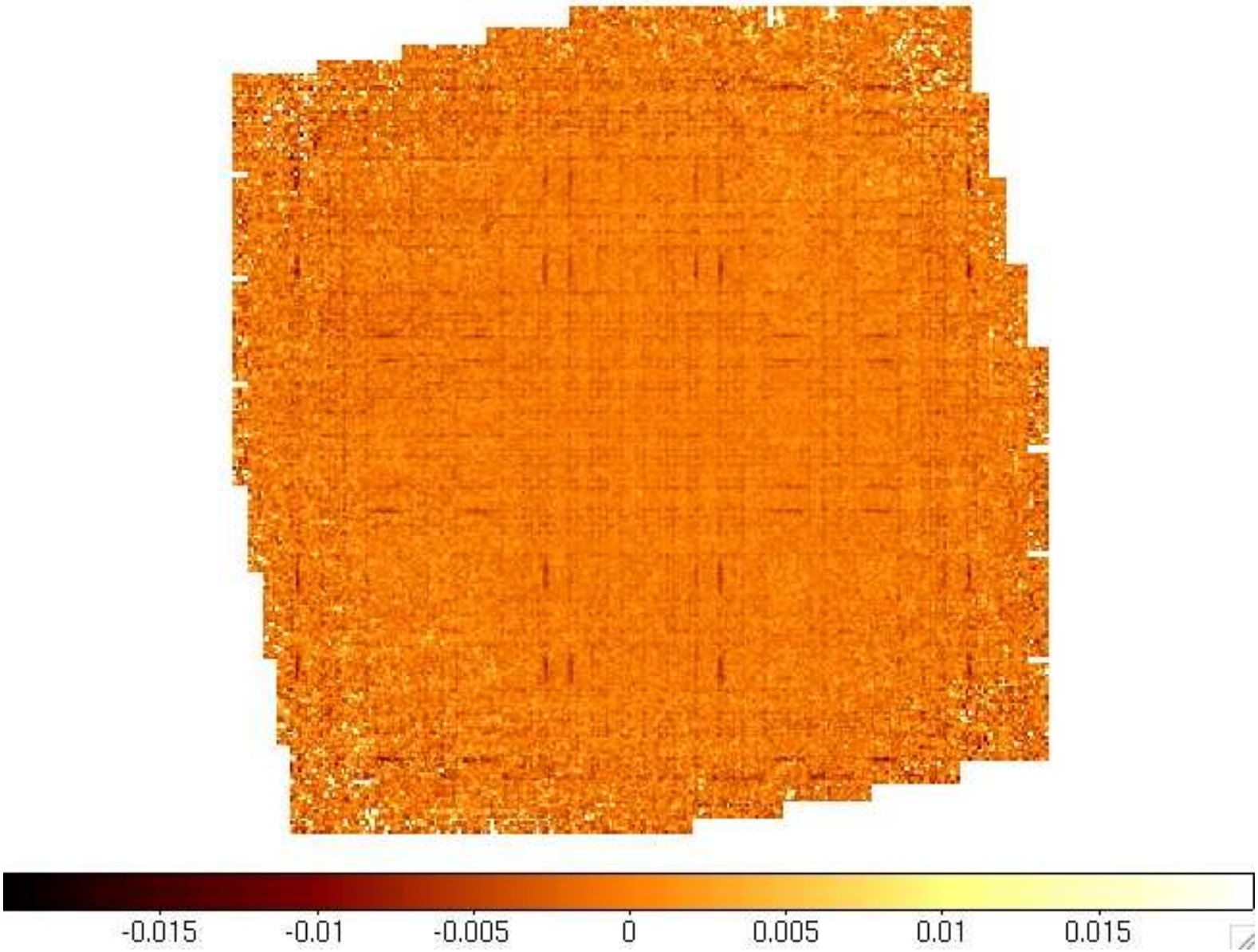
Crab
rev 839,
wide 5X5
(2.33° steps)

25 SCWs only

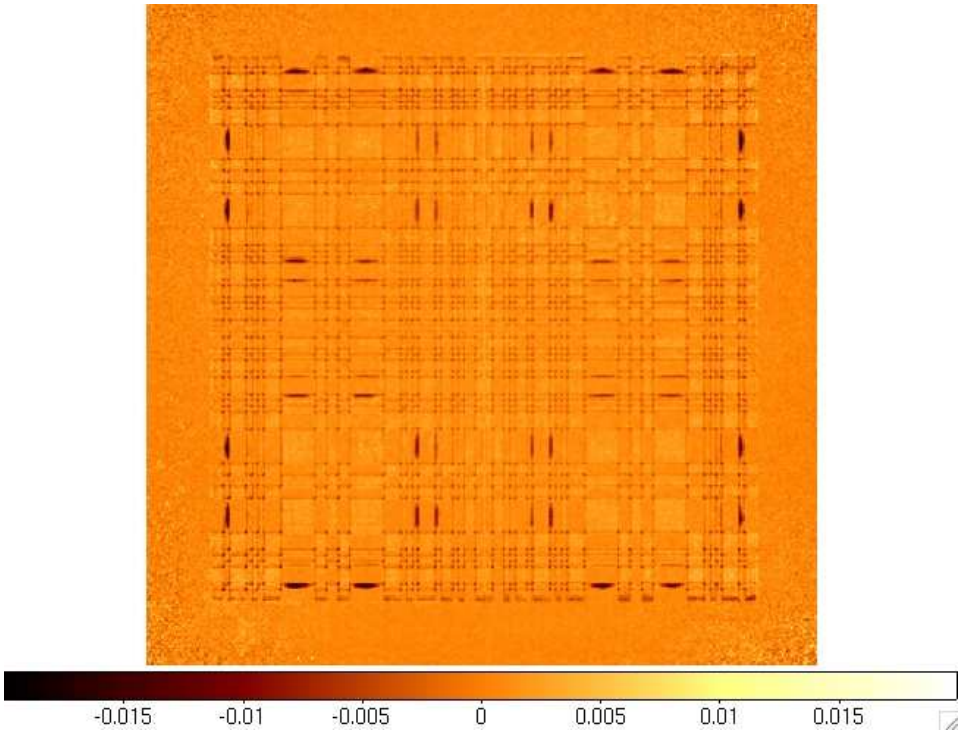


All SCWs

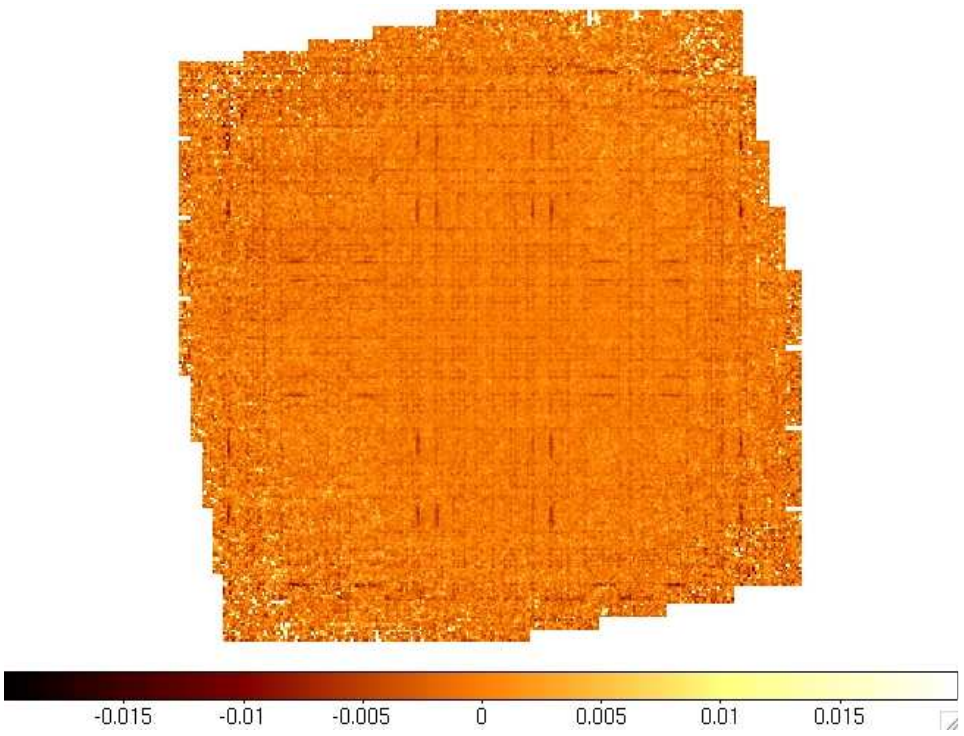
Crab (rev 839)



Cyg X-1+ Crab
(up to rev 774)

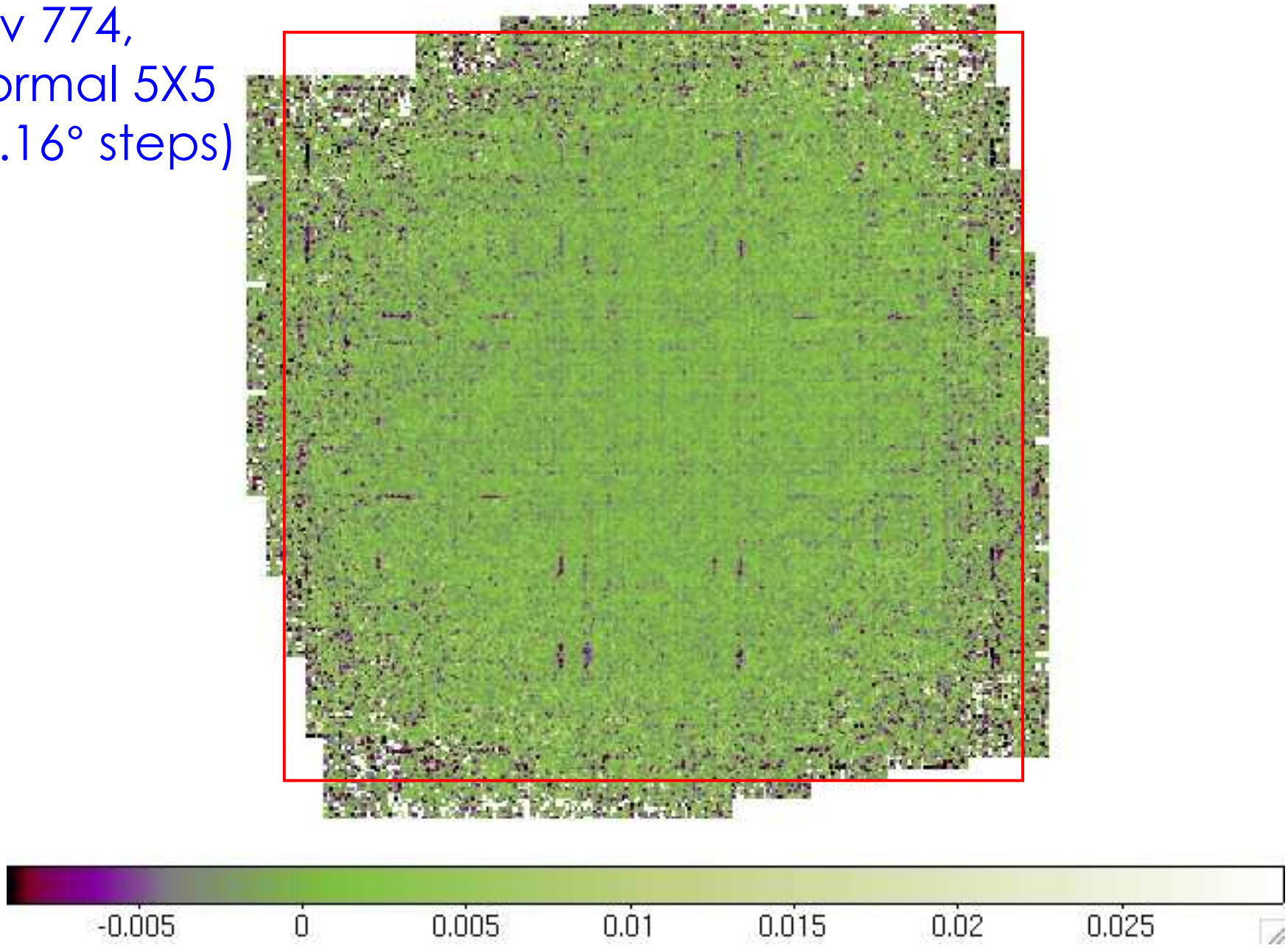


Crab
(rev 839)



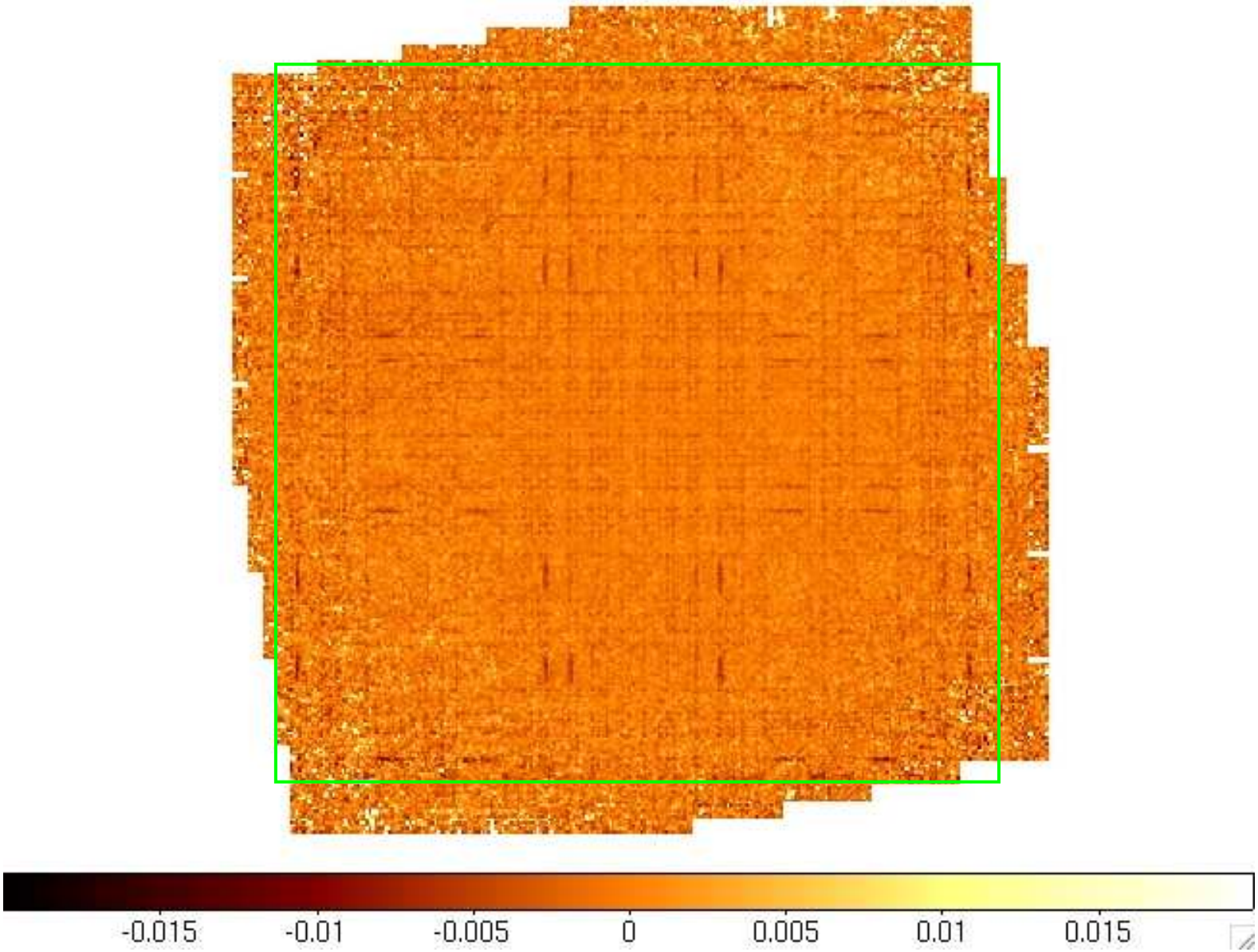
Crab
rev 774,
normal 5X5
(2.16° steps)

25 SCWs only



All SCWs

Crab (rev 839)

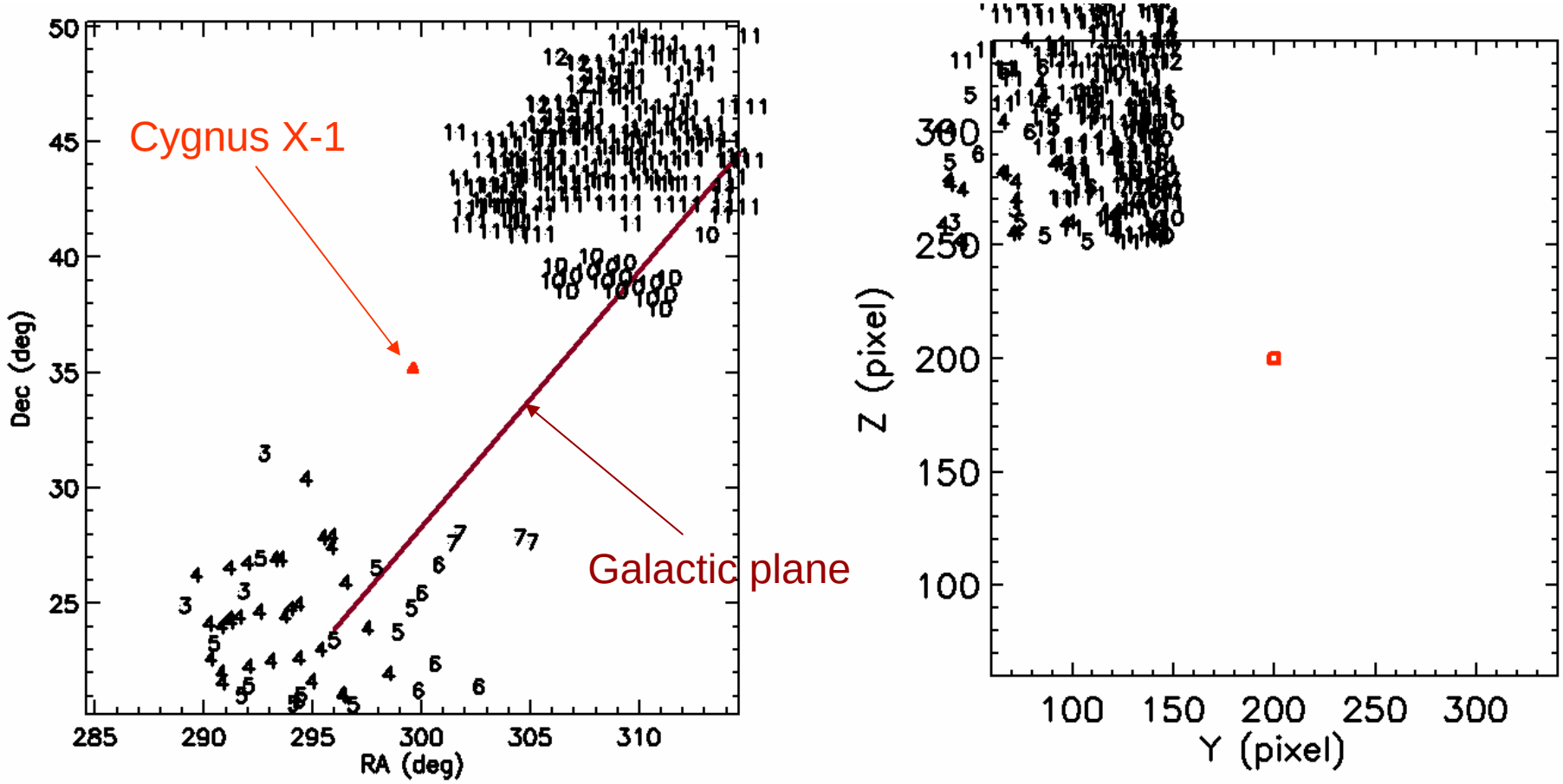


IBIS Mask calibration with Crab

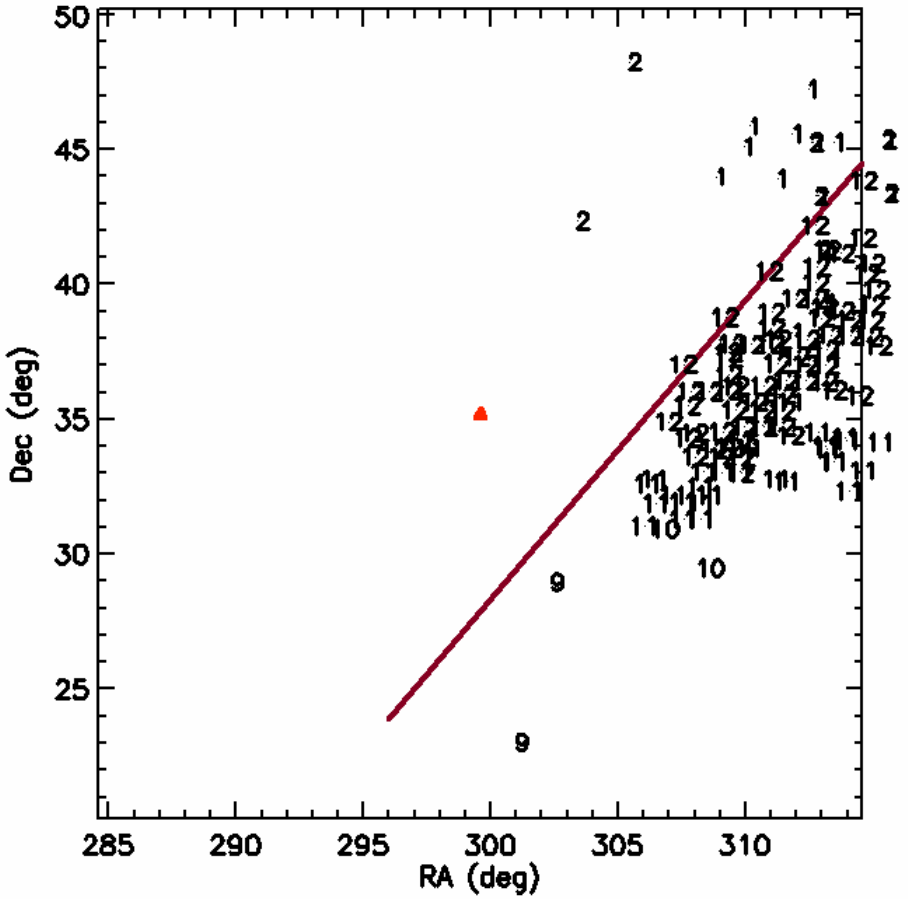
- The 11.3° inclination of the grid axis wrt the instrument axis was introduced to smooth the systematics on the sky
- For calibration observations, there is no need for this inclination
- The IBIS mask calibration may be improved, though with low efficiency (16%) with standard 5x5 grids (2.16° steps) provided the grid axis are parallel to the instrument axis.
- However, with only 2 calibration orbits per year (~4 10^5 s), the IBIS need may be attained in 32 years from now !

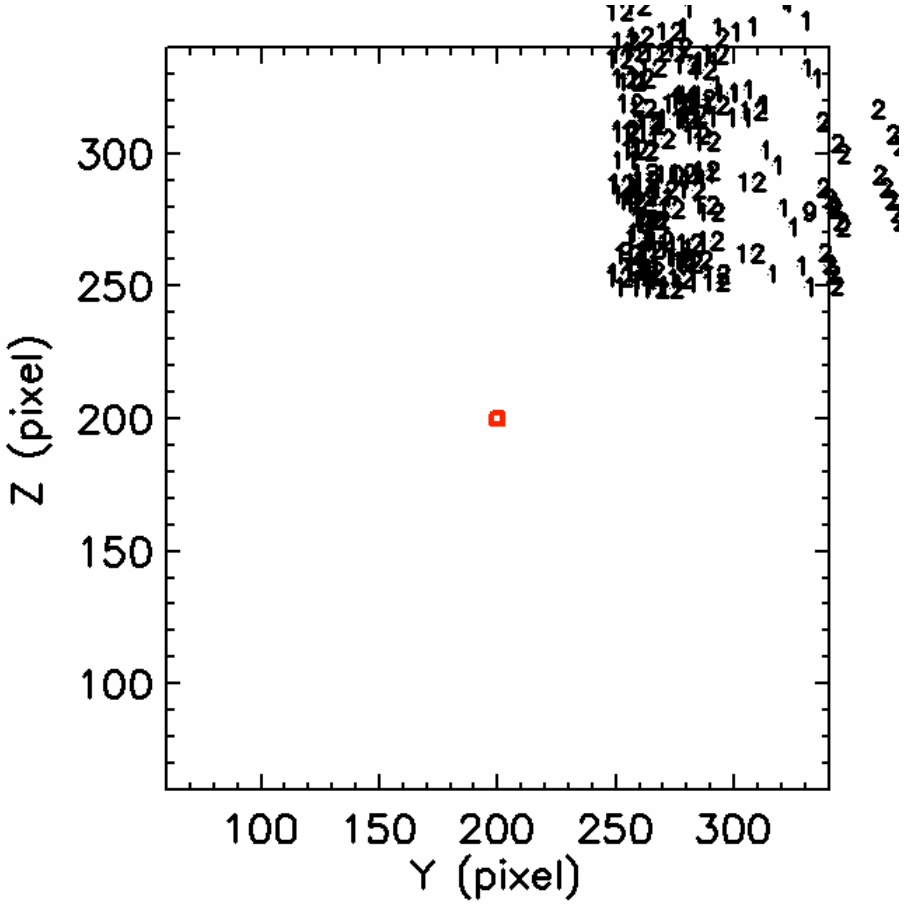
Using Cygnus X-1

Pointings and monthes of Cygnus X-1 observations illuminating the (-Y,+Z) IBIS mask corner



Pointings and monthes of Cygnus X-1 observations illuminating the (+Y,+Z) IBIS mask corner





Mask calibration proposal

* The IBIS mask calibration need may be satisfied with 790 ks of exposures dedicated to the 2 less exposed mask corner.
* Let's have dedicated observations, the routine Crab calibration will be far too slow (32 years)
  * A 790 ks Crab observation may be designed
  * Alternatively, Cygnus X-1 may be use but in that case, the observing dates should be decided together with the pointings to be sure to see the proper corners