IUG 6/11/2008
ESAC

IBIS/ISGRI

F. Lebrun

APC/Saclay group evolution

- Fabio Mattana arrived at APC in March
- Matthieu Renaud will join APC in September
- Diego Gotz will leave INTEGRAL in September but will stay around (SVOM/Eclairs)
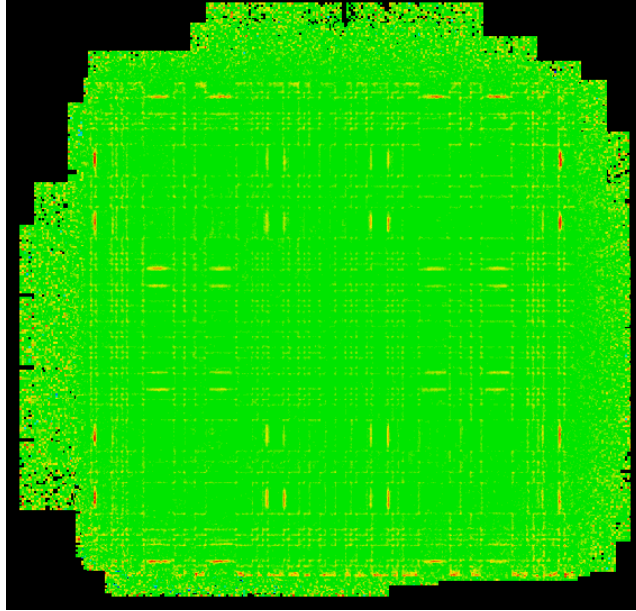- Guillaume Decerprit (PhD student) started ISGRI BKG studies in April

Progressing actions

- Ghosts residuals:
  - IBIS mask model: F. Lebrun + A. Gros
  - ISGRI uniformity: F. Mattana
  - Bright mode: A. Gros + A. Goldwurm
- Photometric calibration (incl. spectral response):
  - ARF/RMF: P. Laurent + F. Lebrun
- Background correction
  - map: M. Renaud
  - evolution: G. Decerprit
  - 2nd order correction: R. Terrier

Pending actions

- Noisy pixels
- SPIBIS
- Lower threshold
- LUT2
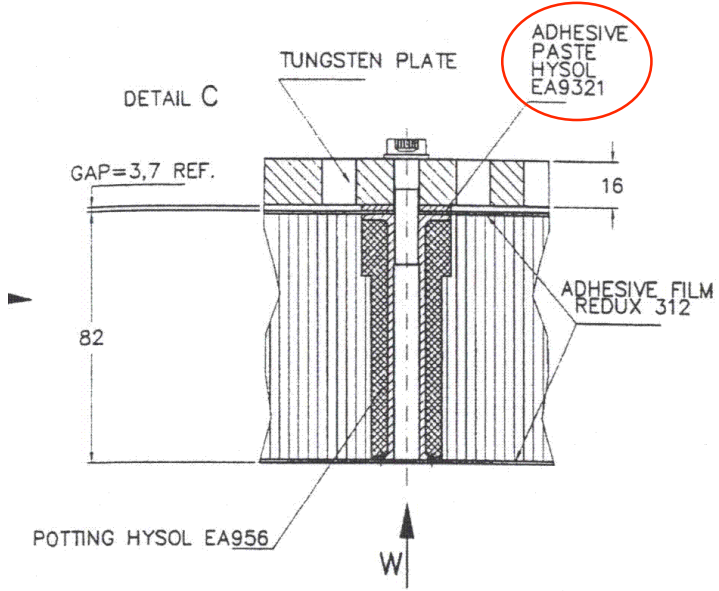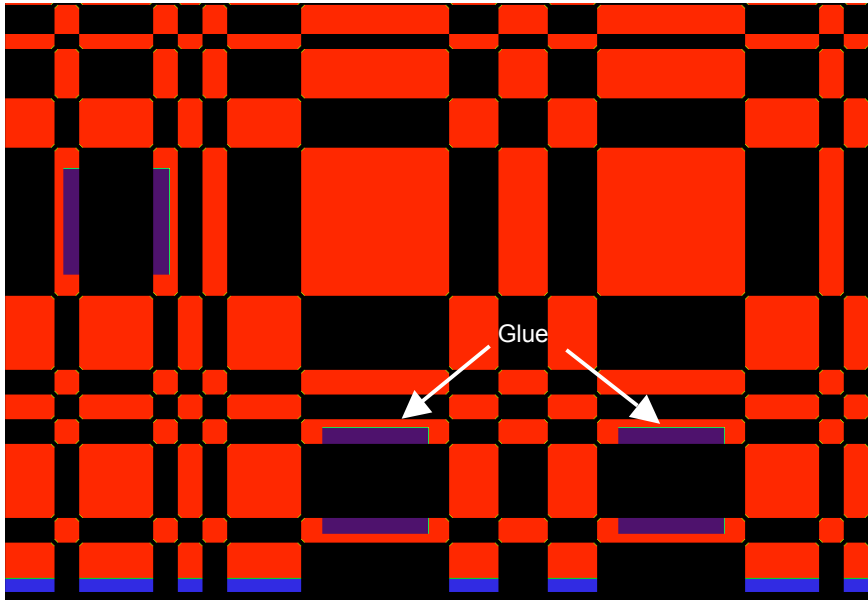- Spectral calibration (gains-offsets and drifts)

Mask model defects

IBIS FM mask code
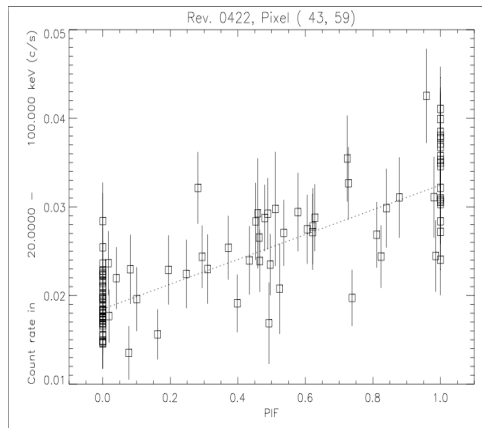
IBIS mask glue

DETAIL C

TUNGSTEN PLATE

ADHESIVE PASTE HYSOL EA9321

GAP=3,7 REF.

16

82

ADHESIVE FILM REDUX 312

POTTING HYSOL EA956

W

Mask model

Glue

Uniformity
Single rev. → bkg ~ c^t

Rev. 422: Crab
108 scws, 197 ks
Energy band
20 - 100 keV

$\sigma U/U$ = 7%
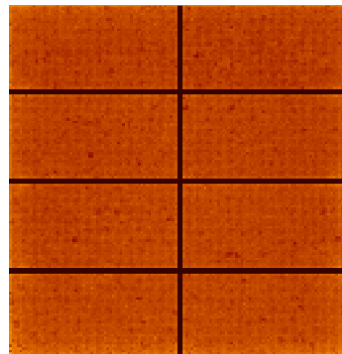χ^2/d.o.f.   = 0.996

Insufficient accuracy

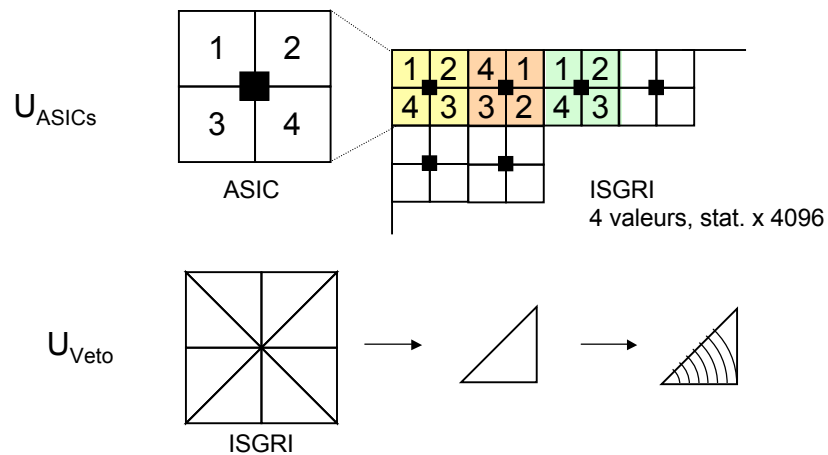

Uniformity
(several revolutions)

- Require an accurate bkg correction
- 1.9 Msec, ΔE ~ 1 keV, 1 pixel : $\sigma U/U \geq$ 8%
- $\sigma U/U$ ~1% → 5 years of Crab pointings

- Is it possible to reduce the number of independent parameters to be measured ?

- ASIC effect apparent

$$U = U_{ASIC} \times U_{VETO} \times U_{?} \dots$$

Bright mode

- PSF is accurate to ~ 1%
- 1 Crab source → 10 mCrab ghosts residuals
- Idea: remove the pixels illuminated by a bright source in the deconvolution of the weaker sources
- Today:
  - ghost residuals strongly removed
  - efficiency reduction as expected
  - Tests/debugging on going

photometric calibration
(spectral response)

- Full charge loss (detector + ballistic) implemented in Monte-Carlo simulation

- Tests on going, no result yet

- OSA 7 → photometric drift (R. Walter): gain/offset drift correction inaccurate ?

Spectral calibration
No gains/offsets drift apparent !
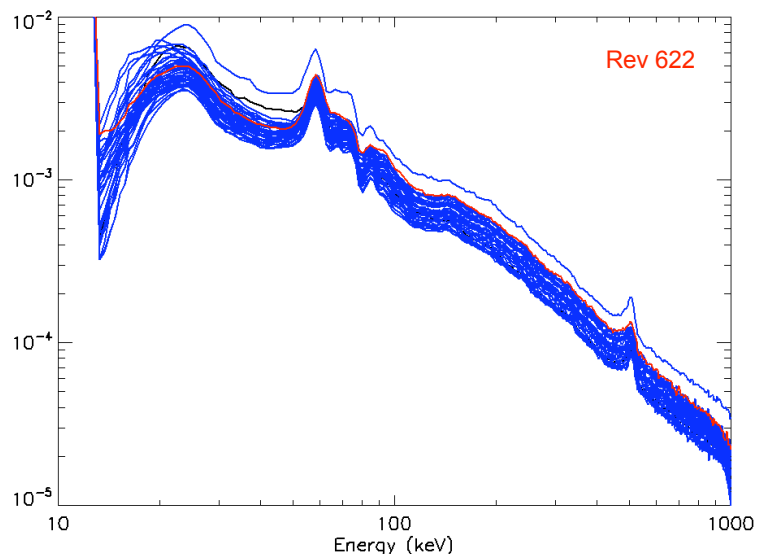
Rev 622

Energy (keV)

photometric calibration
(spectral response)

- Full charge loss (detector + ballistic) implemented in Monte-Carlo simulation
- Tests on going, no result yet
- OSA 7 $\rightarrow$ photometric drift (R. Walter):
  - gain/offset drift correction inaccurate ?
  - Lower threshold drift ?
  - Background correction ?
  - Charge loss 2nd order effect ?

Background corrections

- OSA 7: a single background map
- The background structure is obviously evolving on a scale < 100 revolutions
- Possible ways:
  - Make a model of the background structure and its evolution
  - Make a series of background maps as a function of time (e.g. every 20 revolutions)