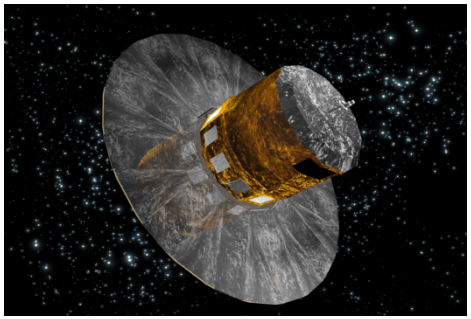
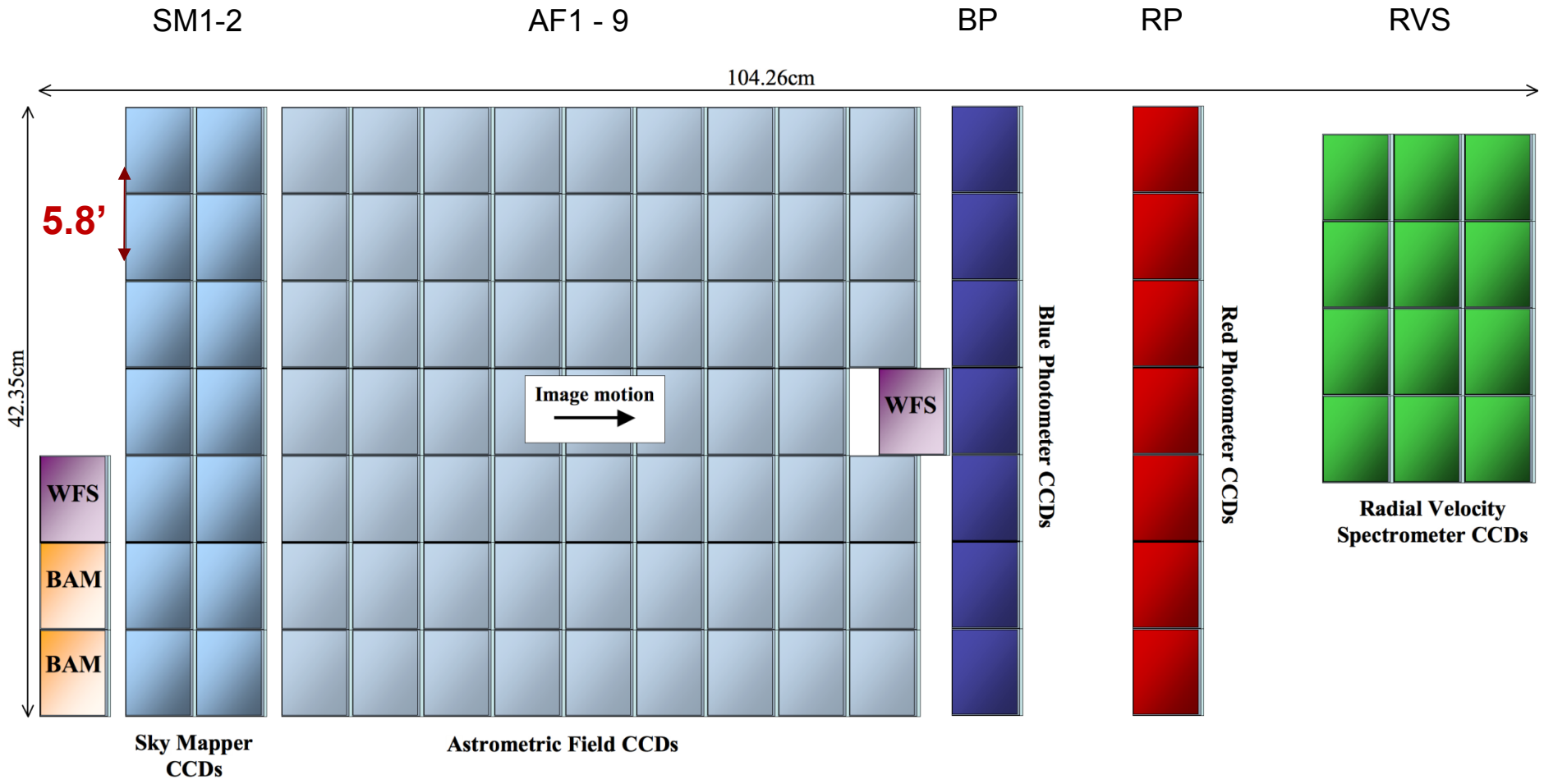
General comments on the detection characteristics with Gaia

Carine Babusiaux

l'Observatoire de Paris GEPI

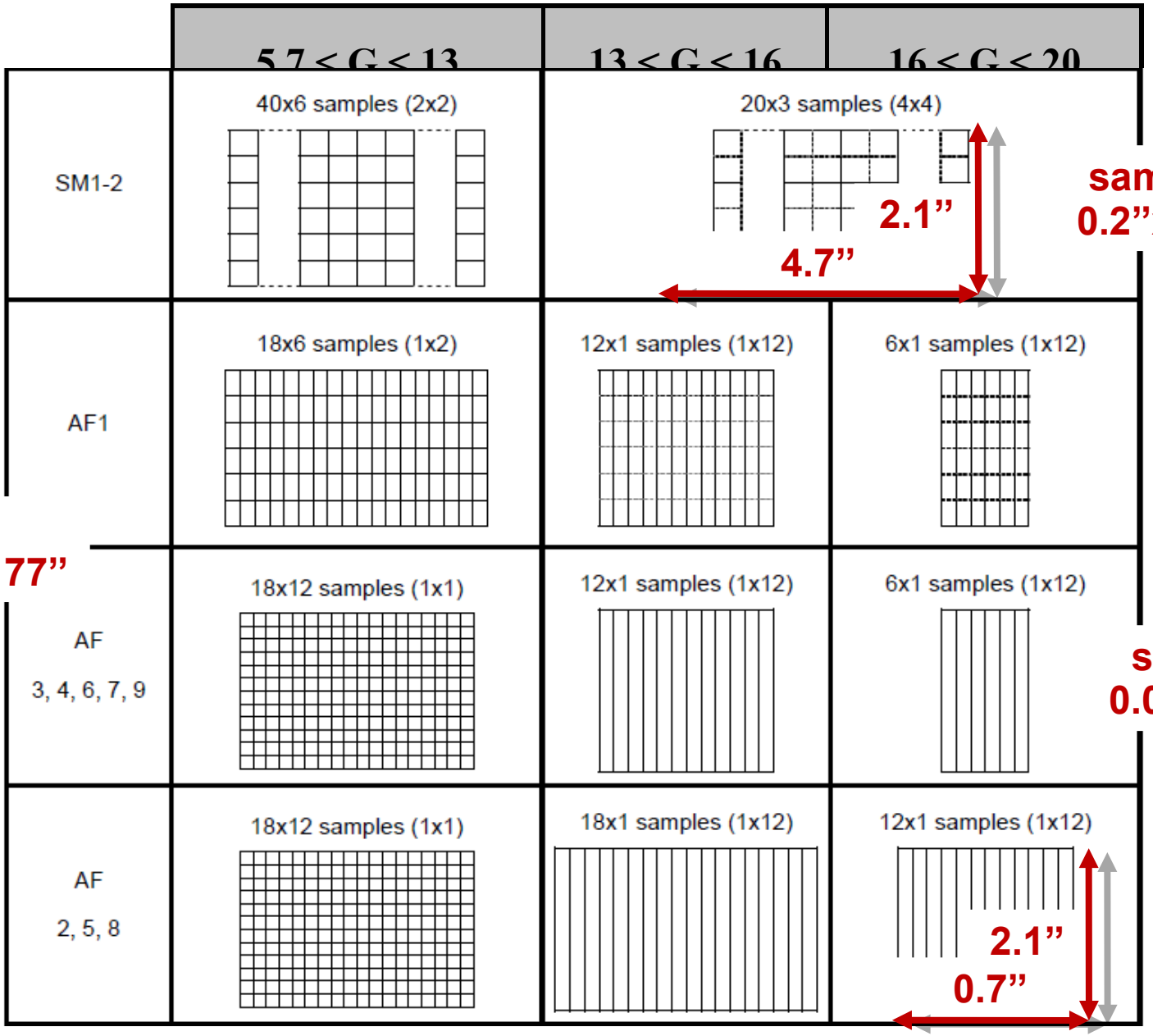


One VPU per row

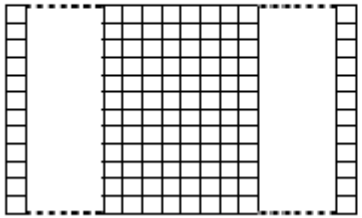
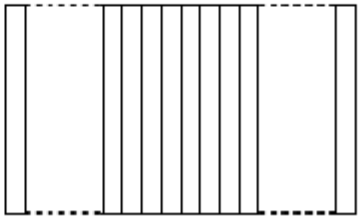


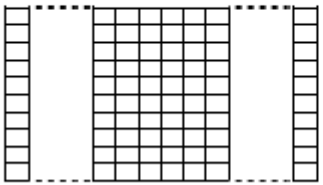
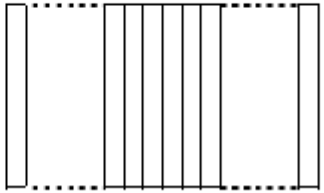
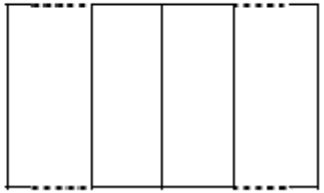
Transmitted astrometric sampling

half exptime:
2.85s

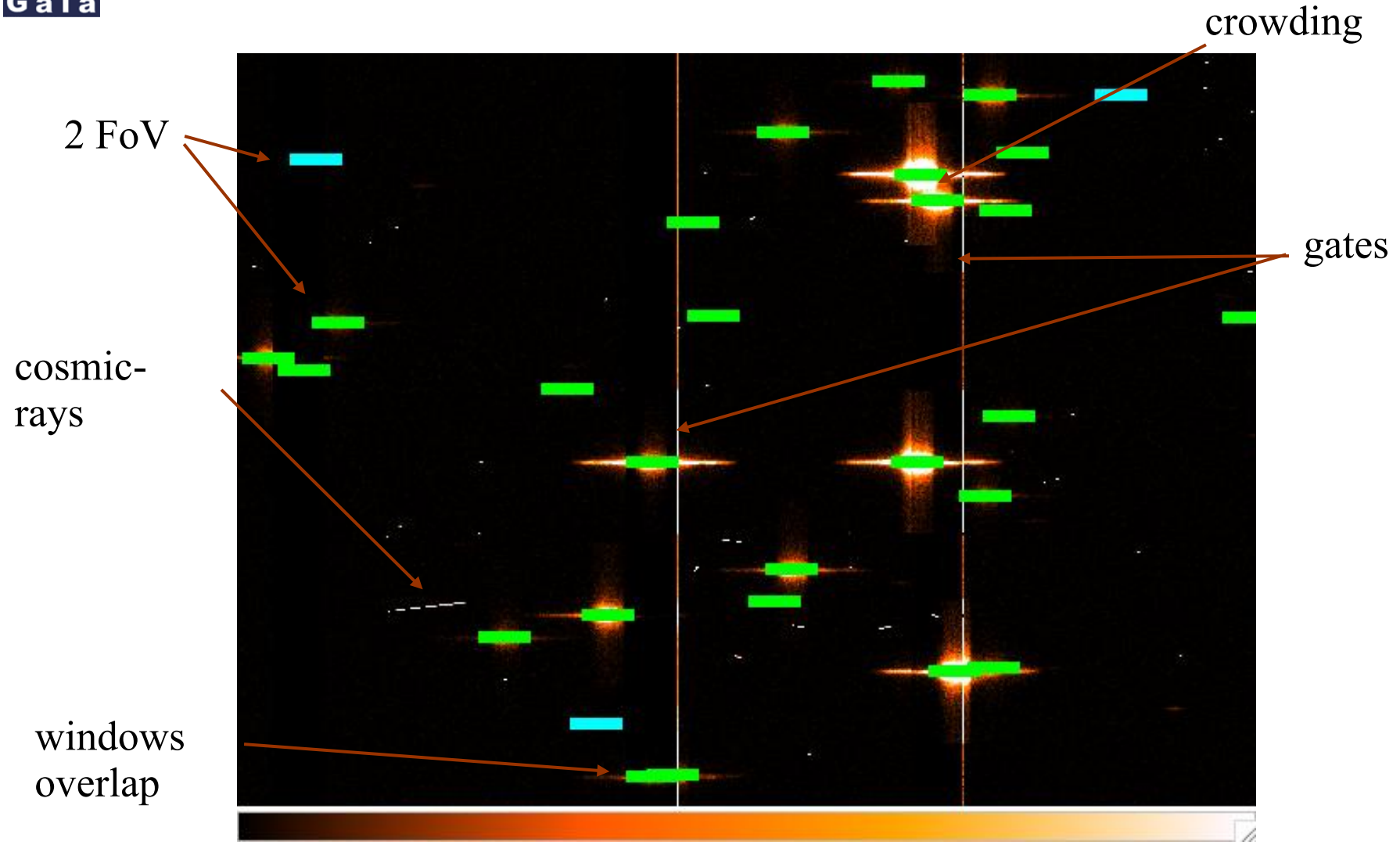


Transmitted XP & RVS sampling

	5.7 < G < 11	11 < G < 20
RP/BP	60x12 samples (1x1) 	60x1 samples (1x12) 

	$G_{RVS} < 7$	$7 < G_{RVS} < 10$	$10 < G_{RVS} < 17$
RVS1-3	HR mode 1260x10 samples (1x1) 	HR mode 1260x1 samples(1x10) 	LR mode 420x1 samples (3x10) 

Example...



RP observation of the open cluster ngc6231

In Astrometry / Spectrophotometry :

- Reference density: 600 000 stars/deg^2 + 150 000 stars/deg^2
  → 1.2 objects per TDI (without bright stars)
- Maximum density: 3 million stars/deg^2
  → 5 objects per TDI (without bright stars)
- Priority on magnitude

In Spectroscopy:

- RVS Reference density: 36 000 stars/deg^2 ($G_{RVS} < 16.75$)

Which targets are affected by crowding?

LMC



image width = 6°

SMC



image width = 5.4°

LMC Bar from HST-PC data $\rightarrow$ 1.3 10^6 stars.deg^{-2} *(SAG-LL-013)*

Which targets are affected by crowding?

8’x6’



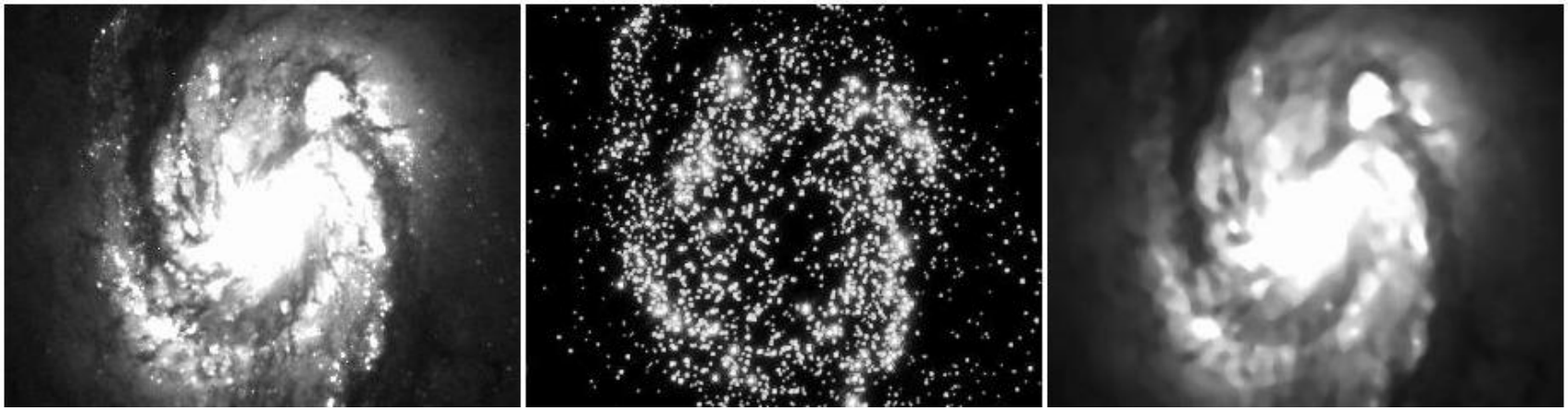
17’x10’

M31 (3°x1°)



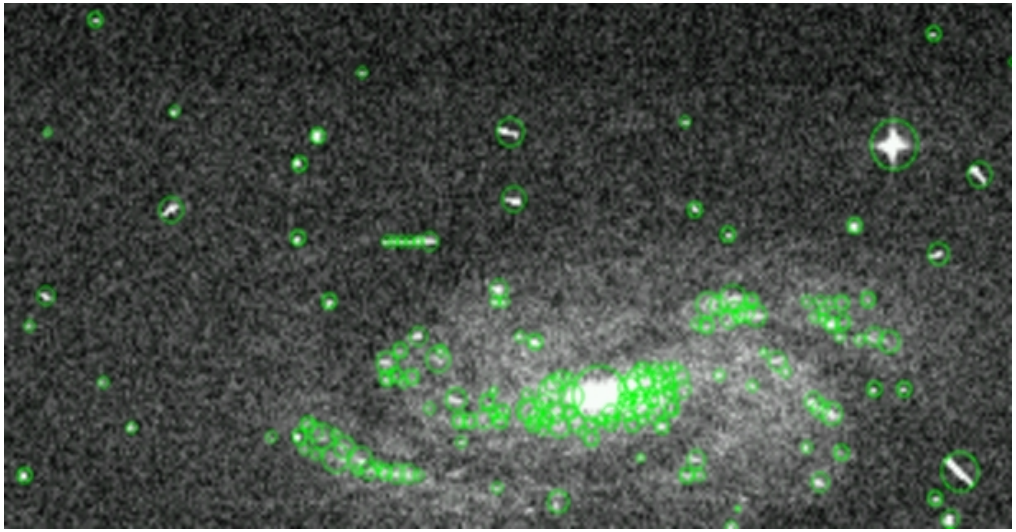
M33 (73’x45’)

Distant resolved Galaxies



Deconvolution using StarFinder (Diolaiti et al. 2000)

M100



SM 32”x32”
from HST-PC

Extended objects detection

- Detection of objects up to 0.2 arcsec required
- Objects affected:
  - SSOs (real size + motion induced smearing)
  - Galaxies
  - Binaries
  - Cosmic rays
  - HII regions
  - Compact globular cluster
  - Supernovae on top of Galaxies
  - …

First unresolved galaxies detectability studies

- SAG-LL-029 (Lindegren, 2000)

using the HST Medium Deep Survey images
→ ~ 6 million galaxies

- GAIA-CUO-104 (Vaccari & Hog, 2002)

→ statistical model of galaxies (magI, type, density, profiles)

Not much on galaxies: no specific requirements

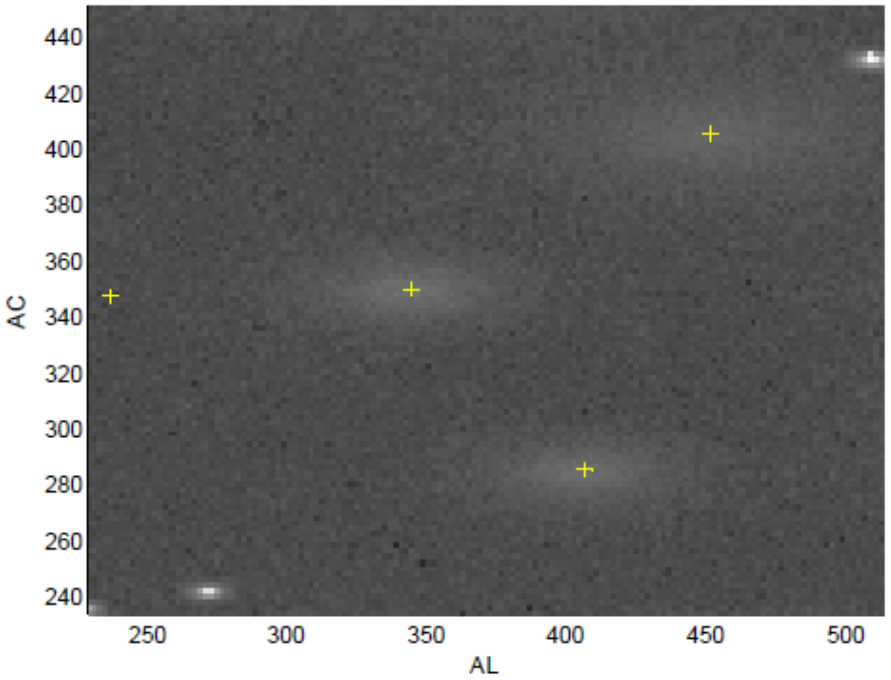


Figure 20 : Examples : Missed detection on galaxies

GAIA.ASF.BG.PLM.00015

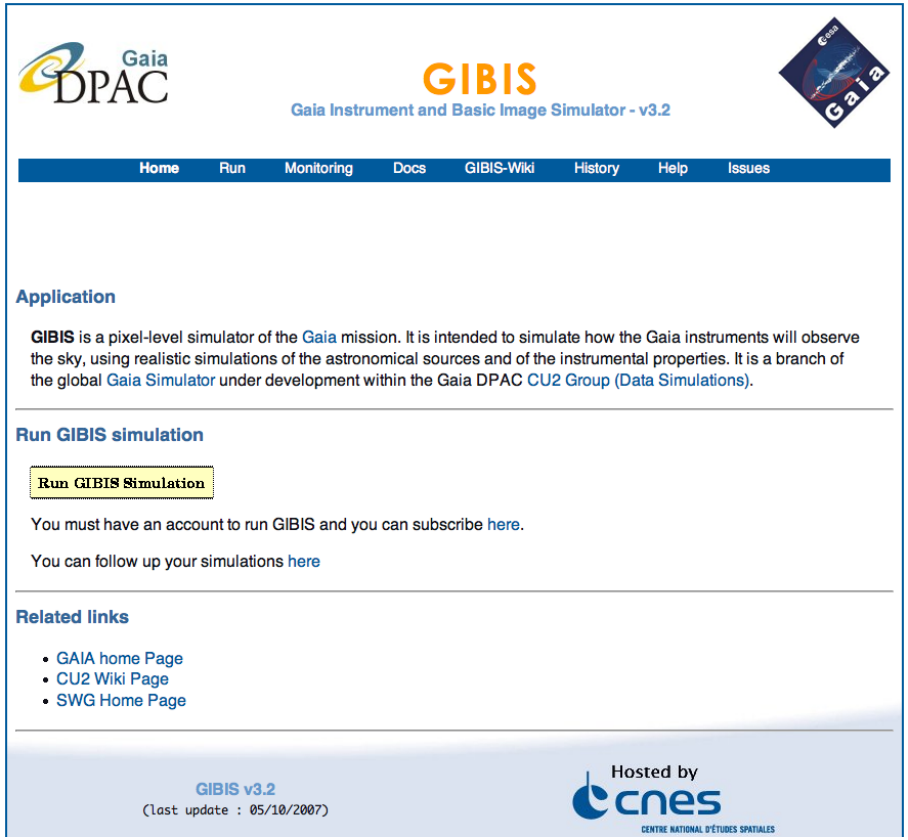
DPAC tests started by A. Krone-Martins

GIBIS : **web service** and **batch mode** in computer clusters.

Unresolved galaxies through
- **jstuff** (model + input files)
- **MAGIL** (input file only)

From GIBIS v.8 ,
Astrium VPA prototype

Warnings, preliminary results:
- VPA
- Noise characteristics
- Threshold levels



http://gibis.cnes.fr/