

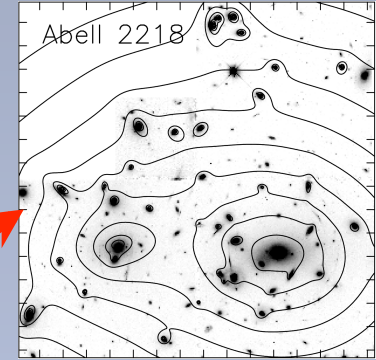
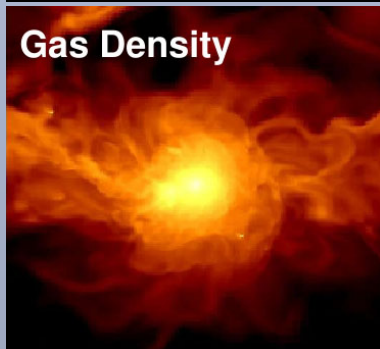
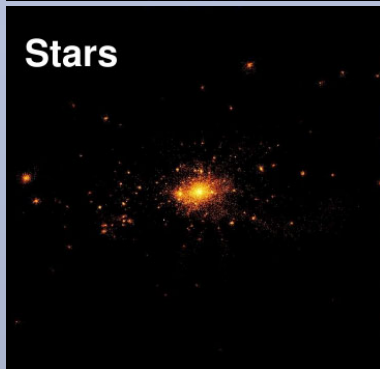
A glimpse at the XXL cluster properties

Florian Pacaud -2012-

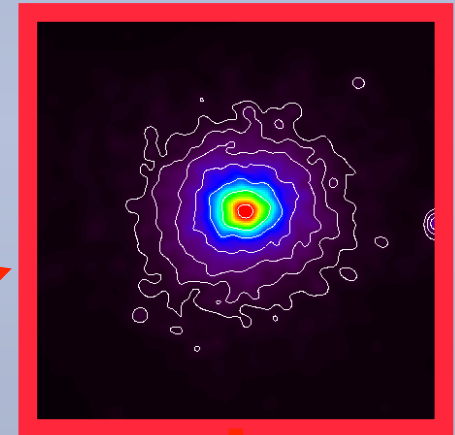
What is a galaxy cluster ?

Simulated universe

Real world



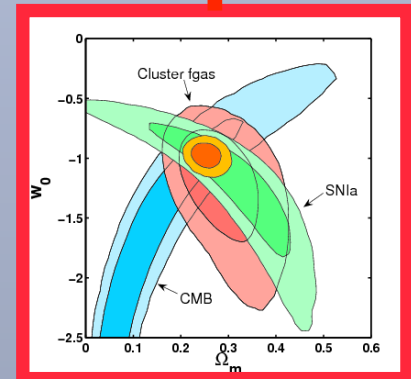
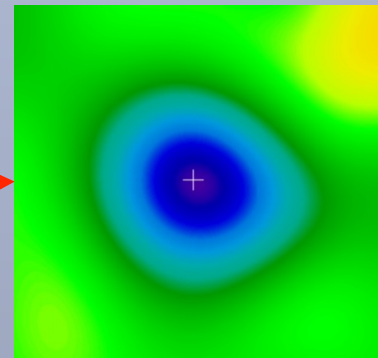
Lens.



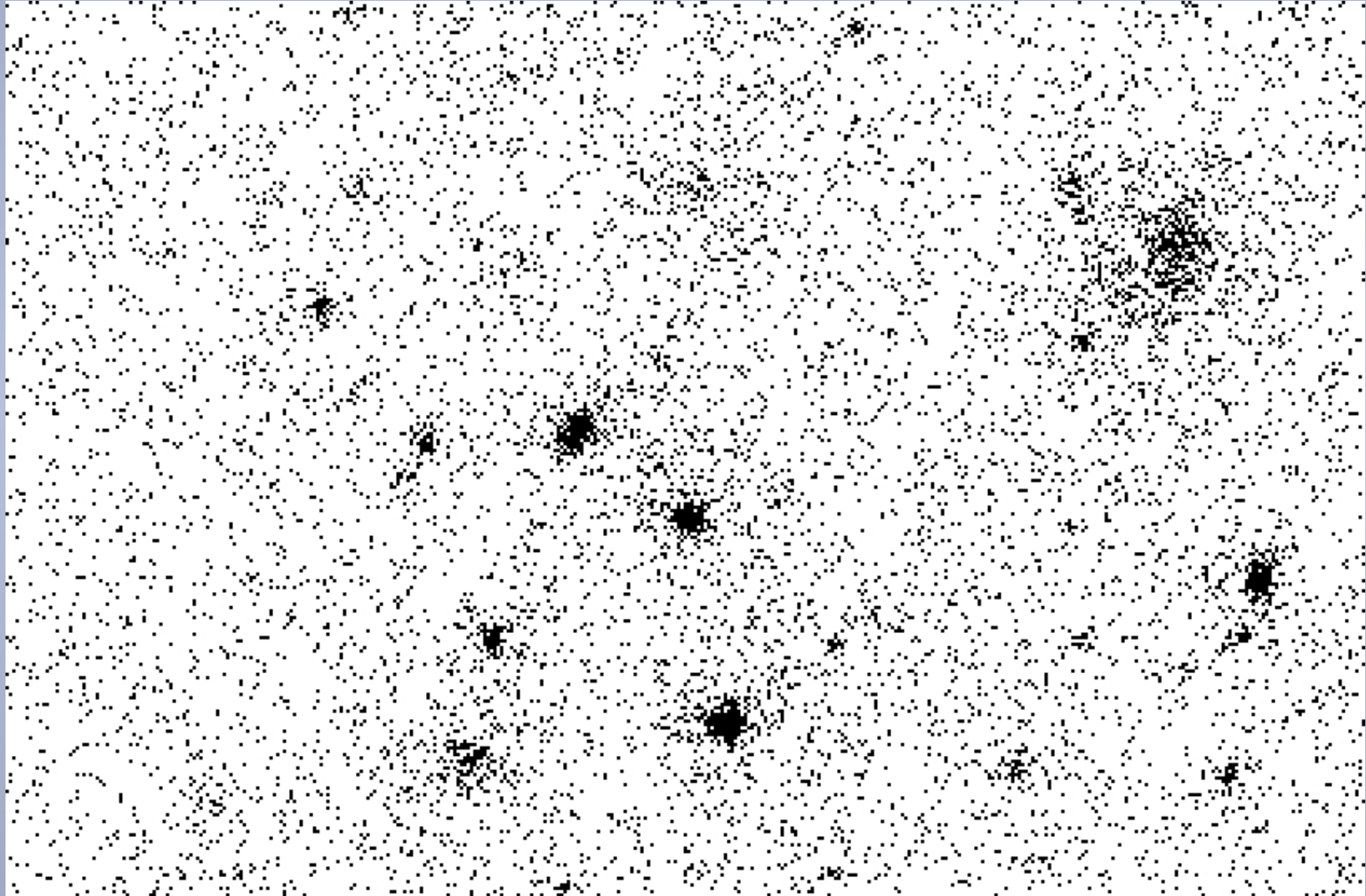
Opt./NIR

X-rays

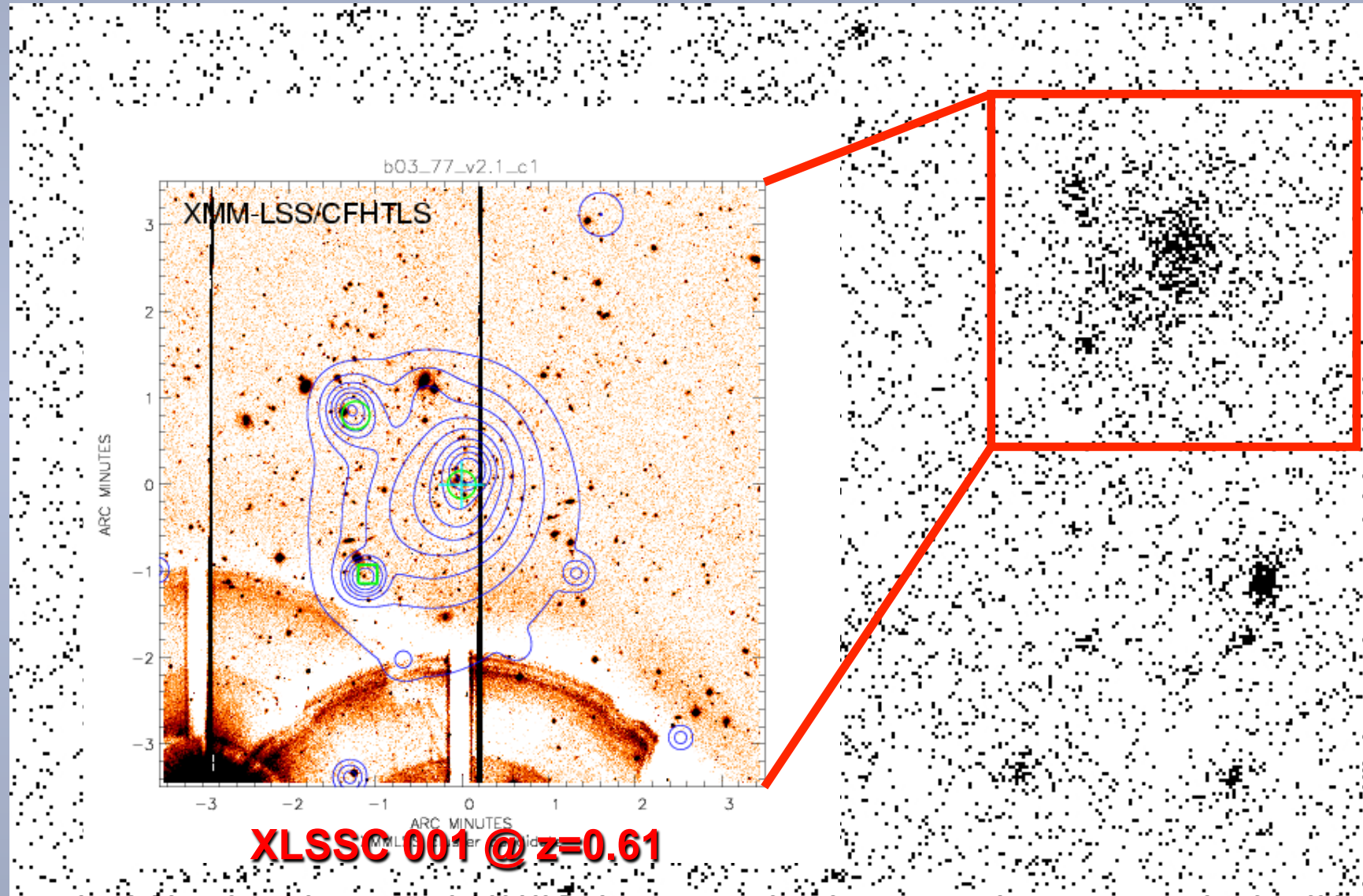
SZE



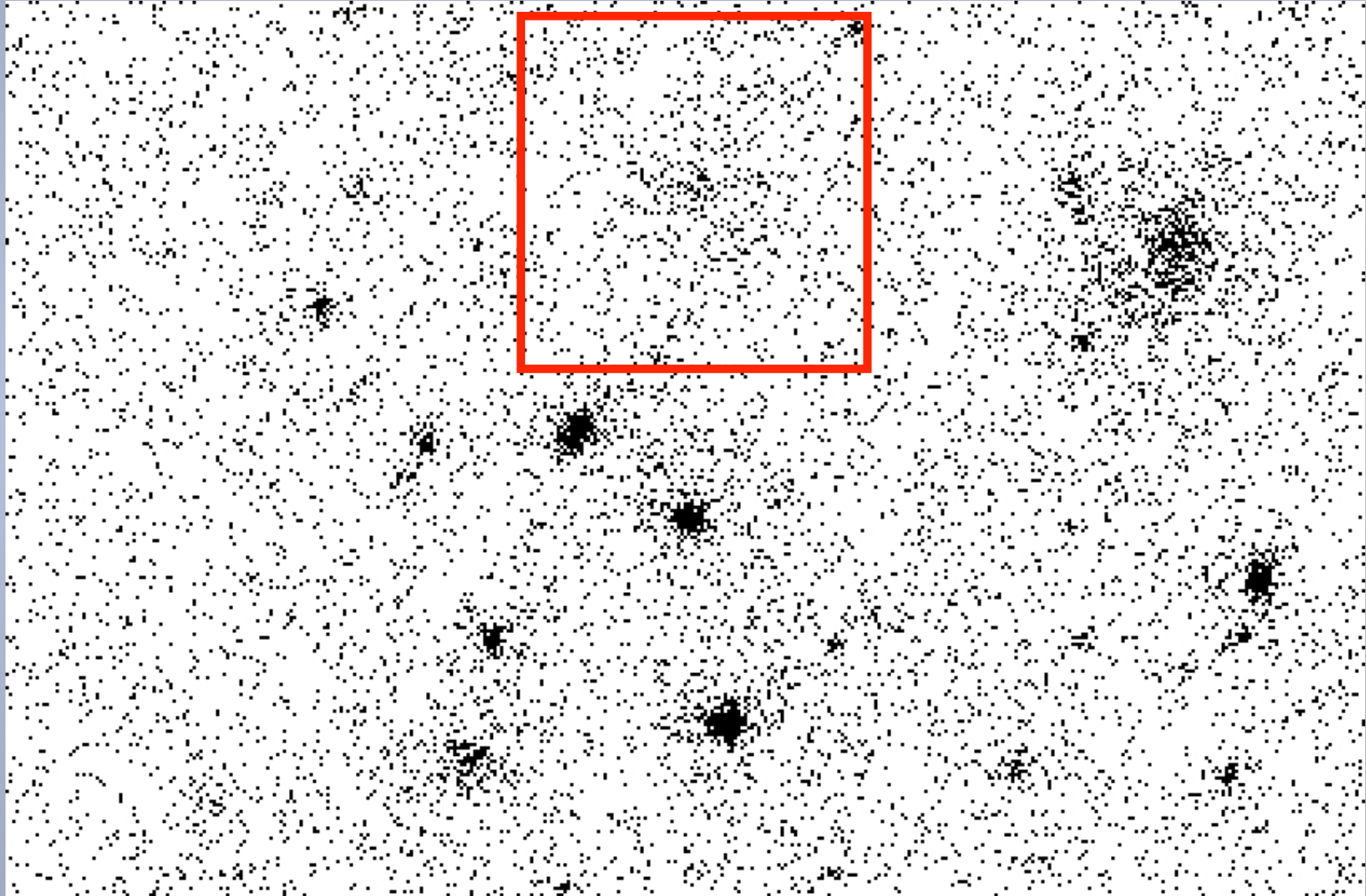
What is an XXL galaxy cluster ?



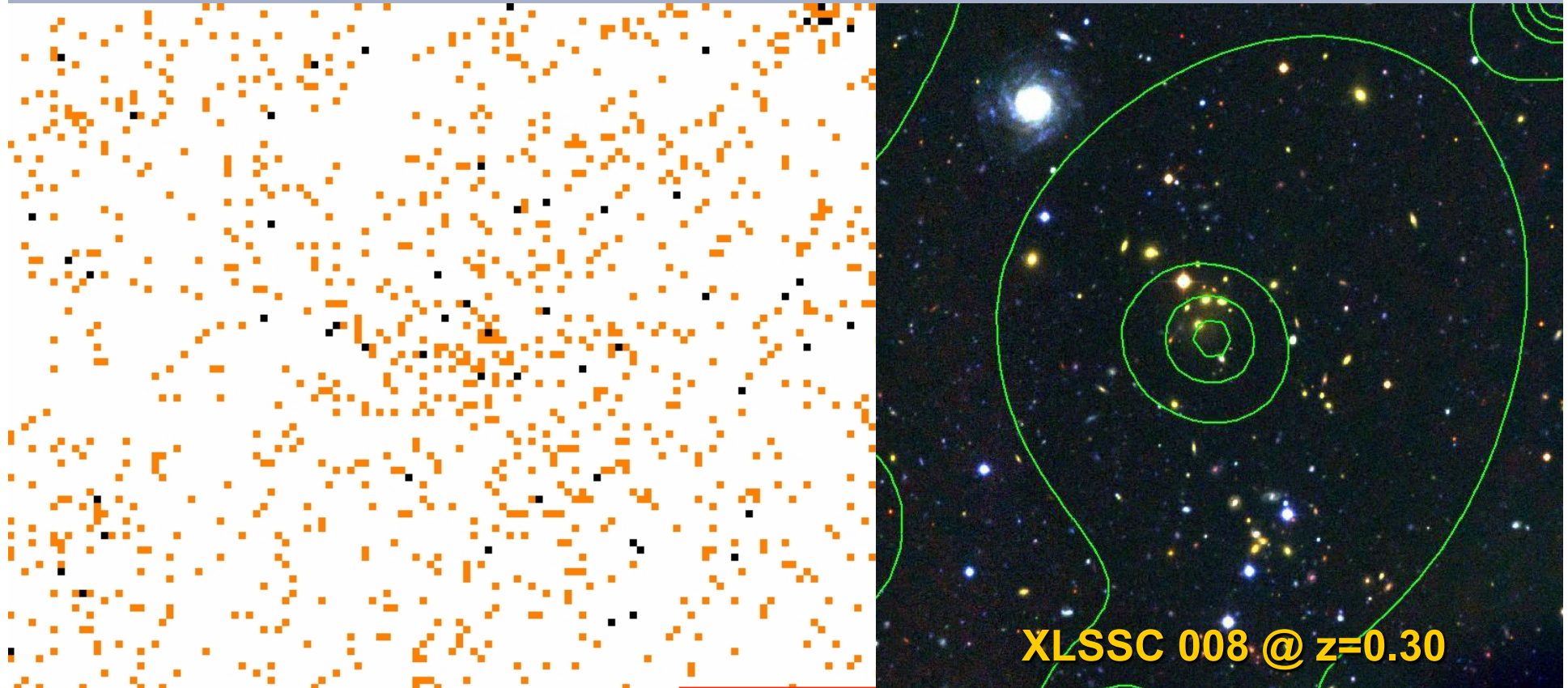
What is an XXL galaxy cluster ?



What is an XXL galaxy cluster ?



What is an XXL galaxy cluster ?



Working with such data is :

Difficult

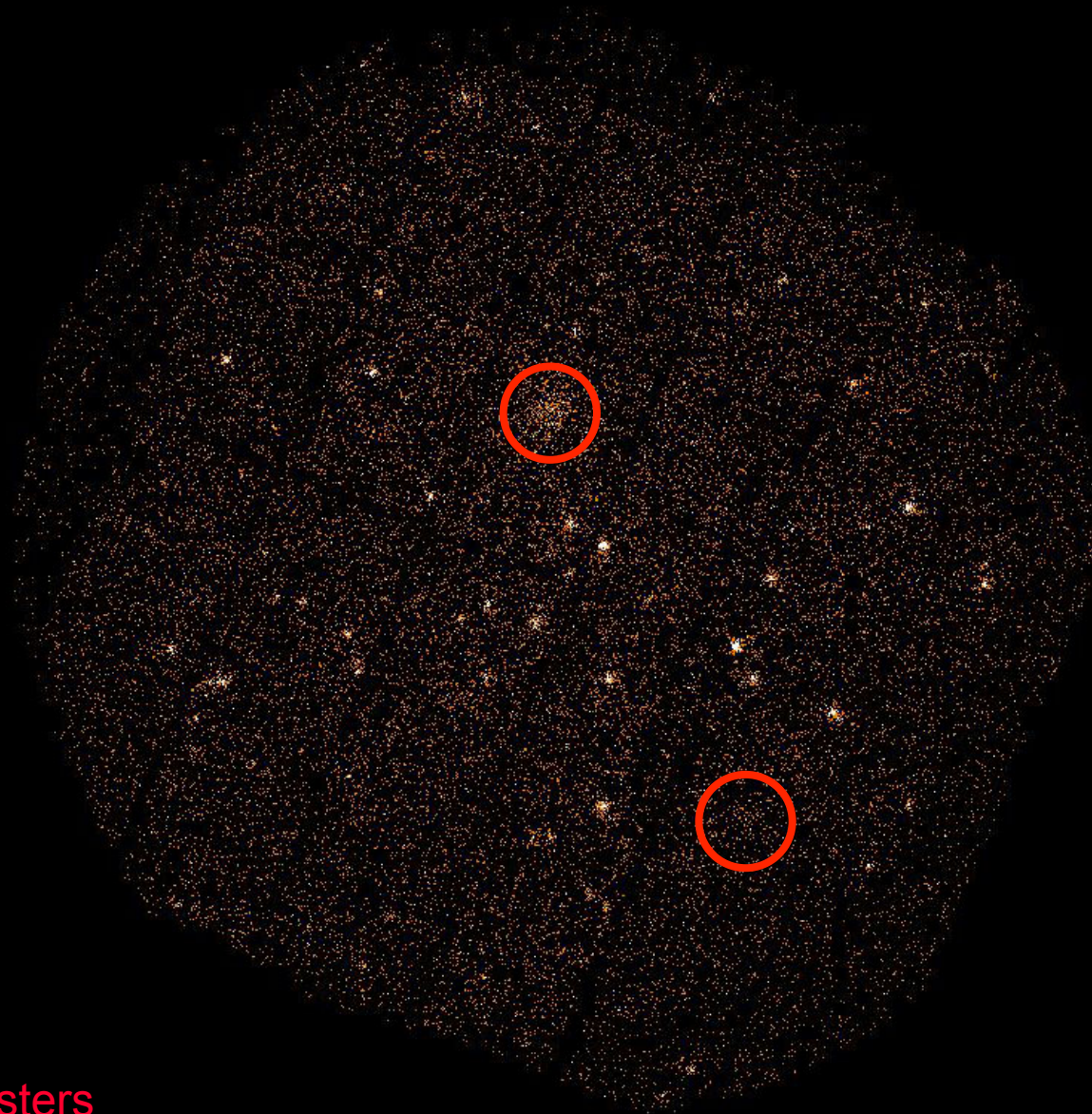
Possibly confusing

(very) ambitious

... but doable !

Detecting clusters

Simulation example



○ = clusters

Pipeline design:

I ODF + XMM-SAS packages> Raw event-lists

+ (eventually) splitting of mosaic exposures

II XMM event list filtering> Raw images, spectra, ...

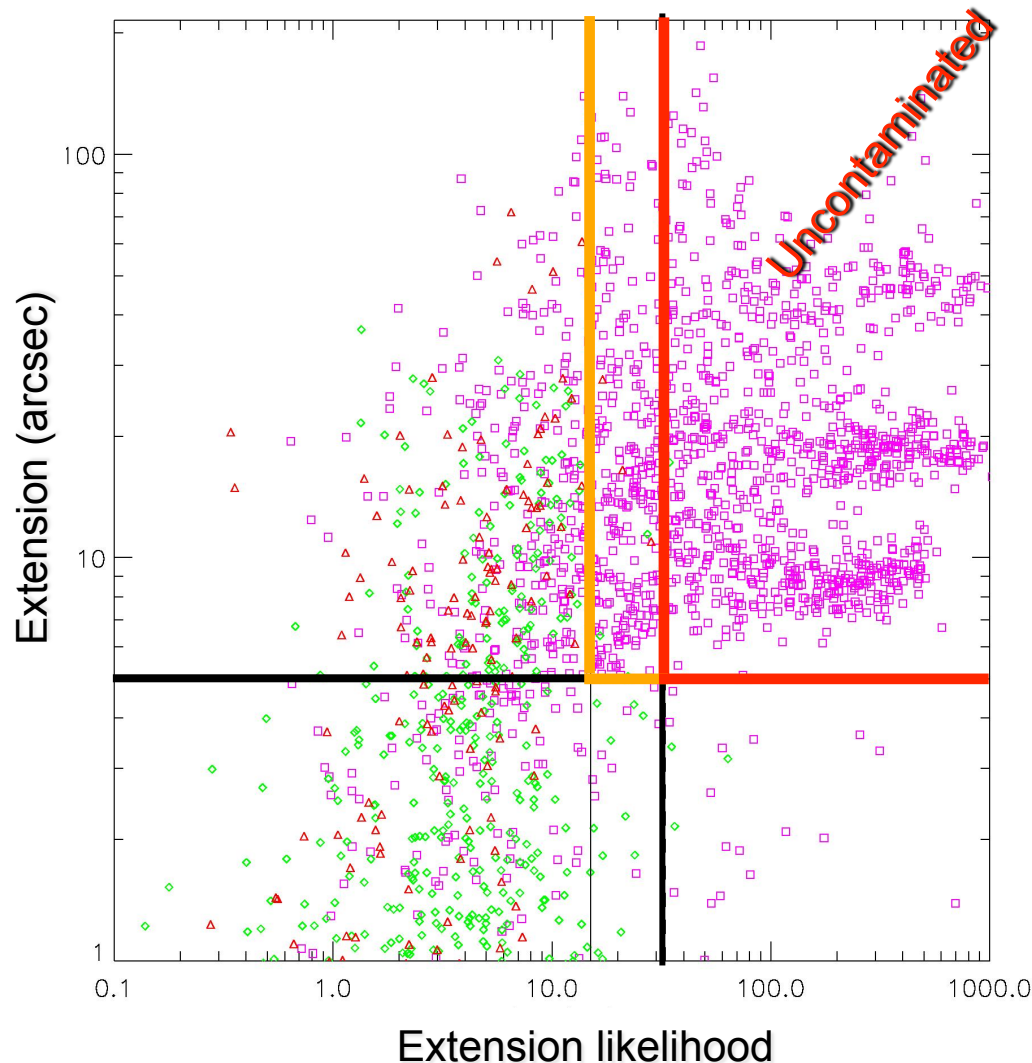
III Wavelet filtering (MR/1)> Smoothed images

IV Source detection (SExtractor)> Primary catalogue

V Maximum likelihood profile fitting algorithm (home made: *XAmin*)> Final catalogue

Selecting a cluster sample

Green = AGNs Magenta = Clusters Red = Spurious.



- **C1:**
Uncontaminated
5-6 / deg²
- **C2:**
50% contaminated
but controlled
another 5 / deg²
- **C3:**
Whatever remains
?? / deg²

Illustration with low S/N sources

○ Simulated clusters

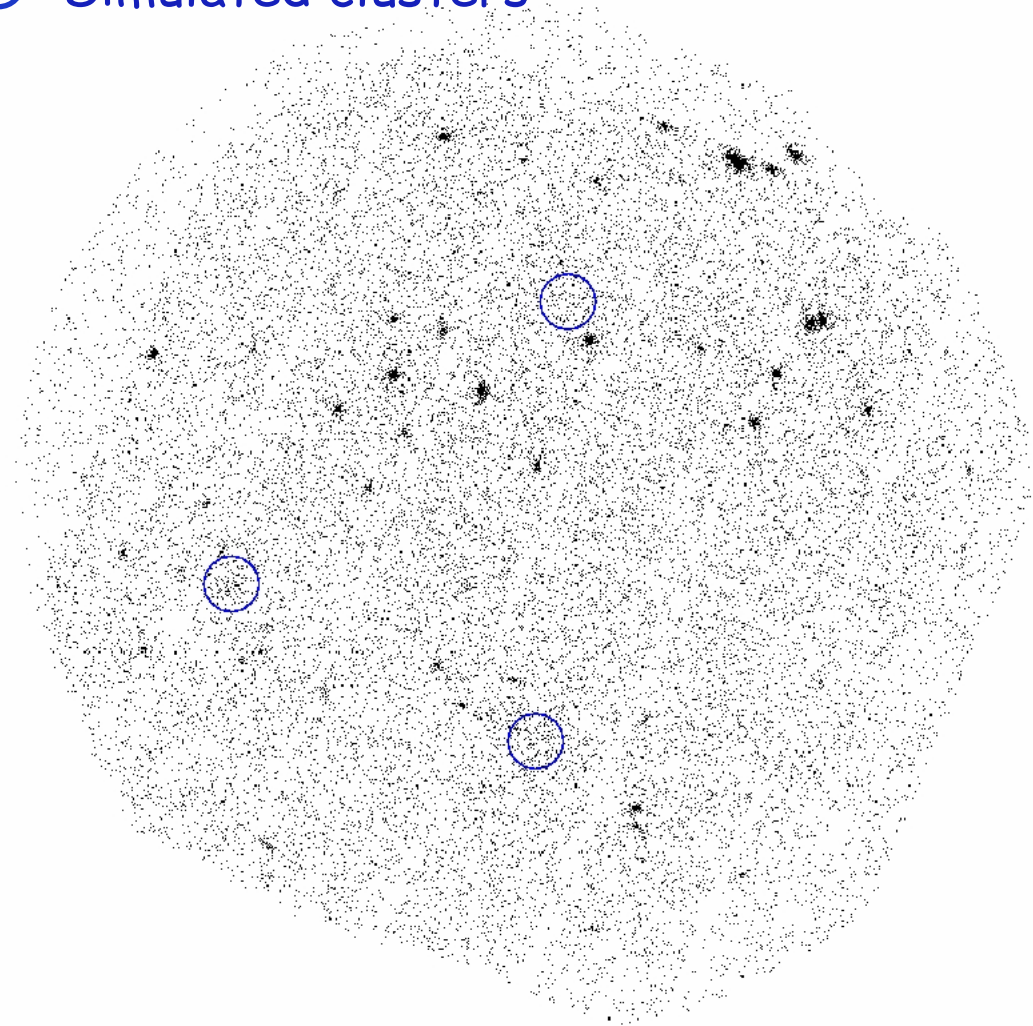
3 clusters

Core radius = 50"

nb of photons

200 , 300, 500

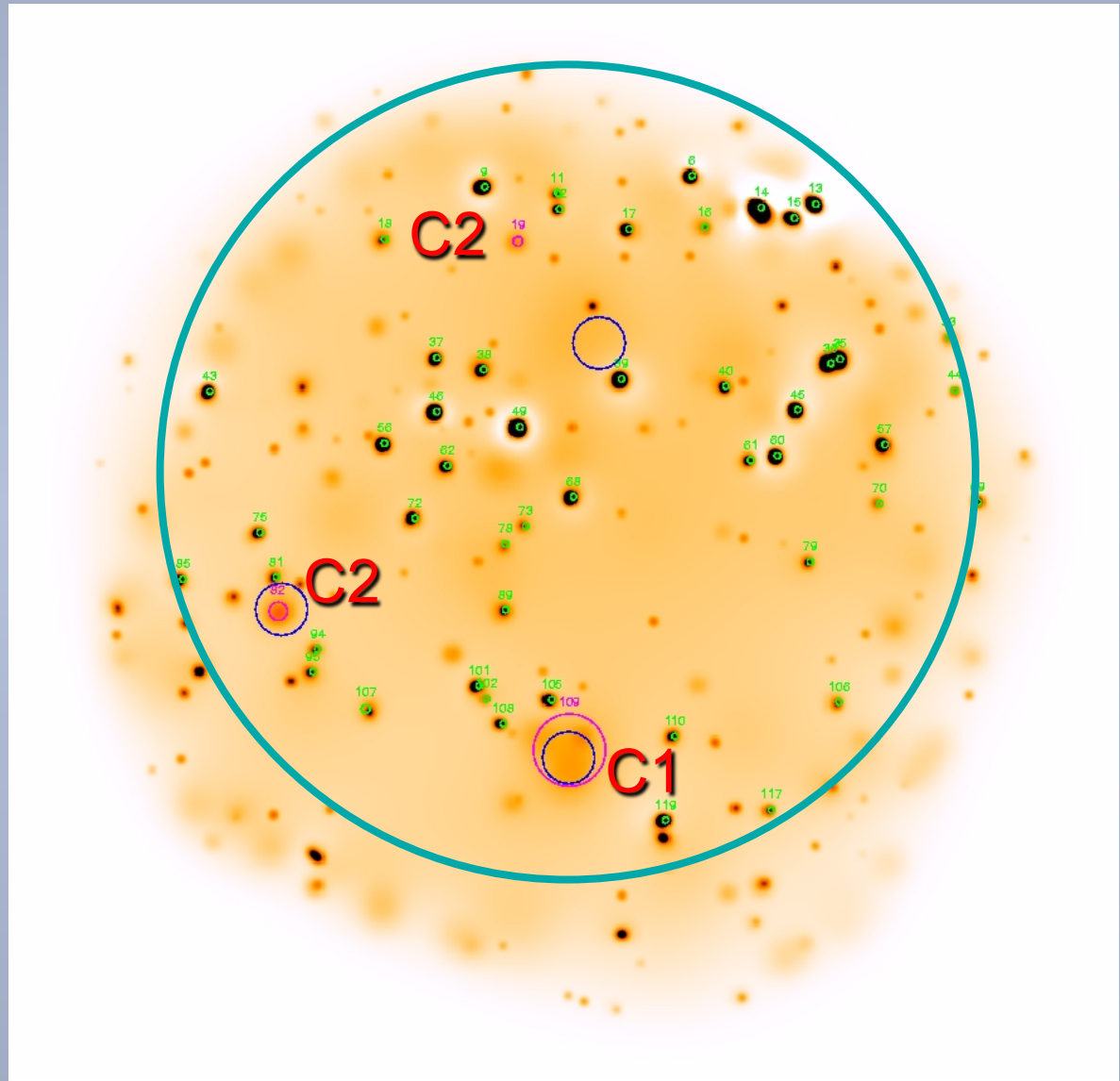
x vignetting



Pipeline results

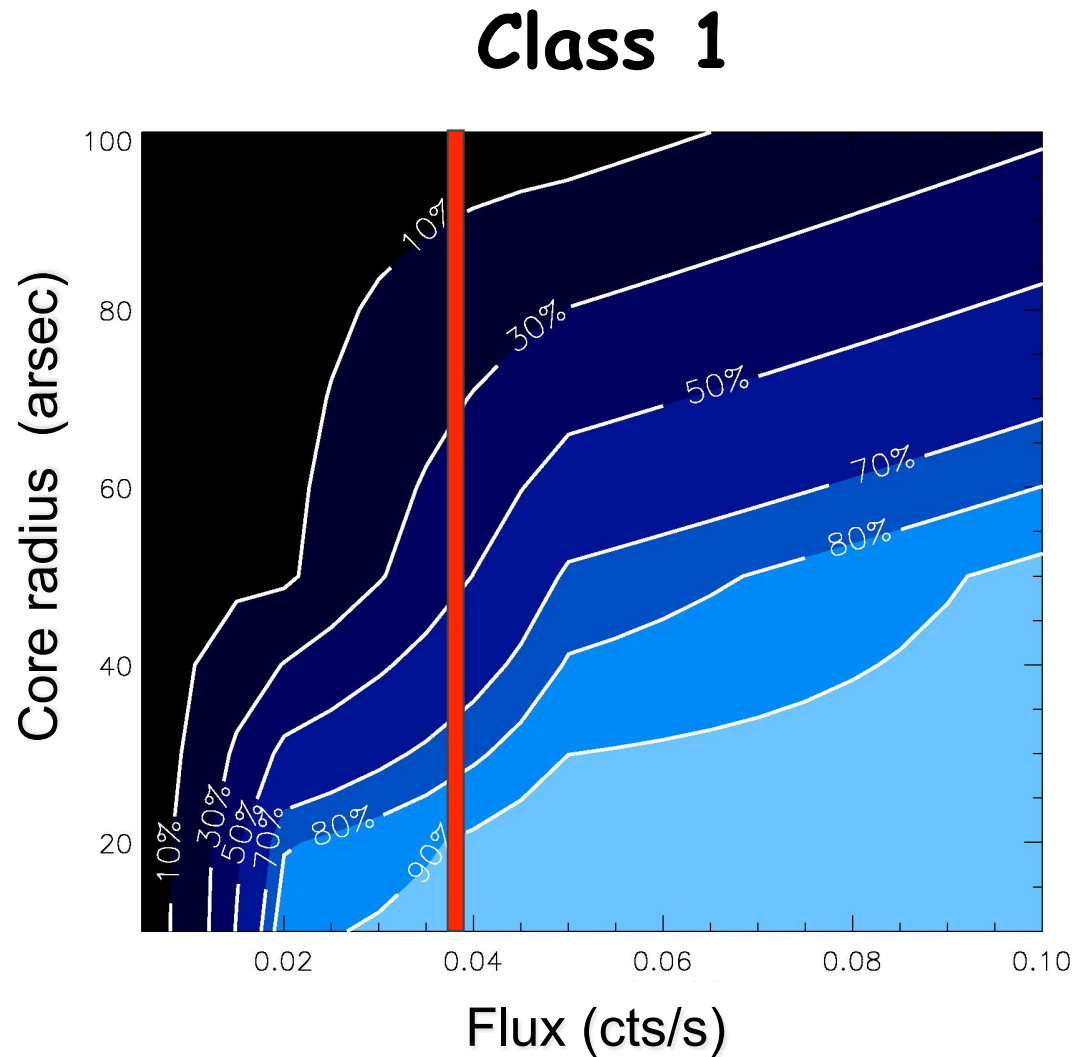
- Simulated clusters
- Detected clusters
- Detected AGNs

○ = detection mask



Detection rates

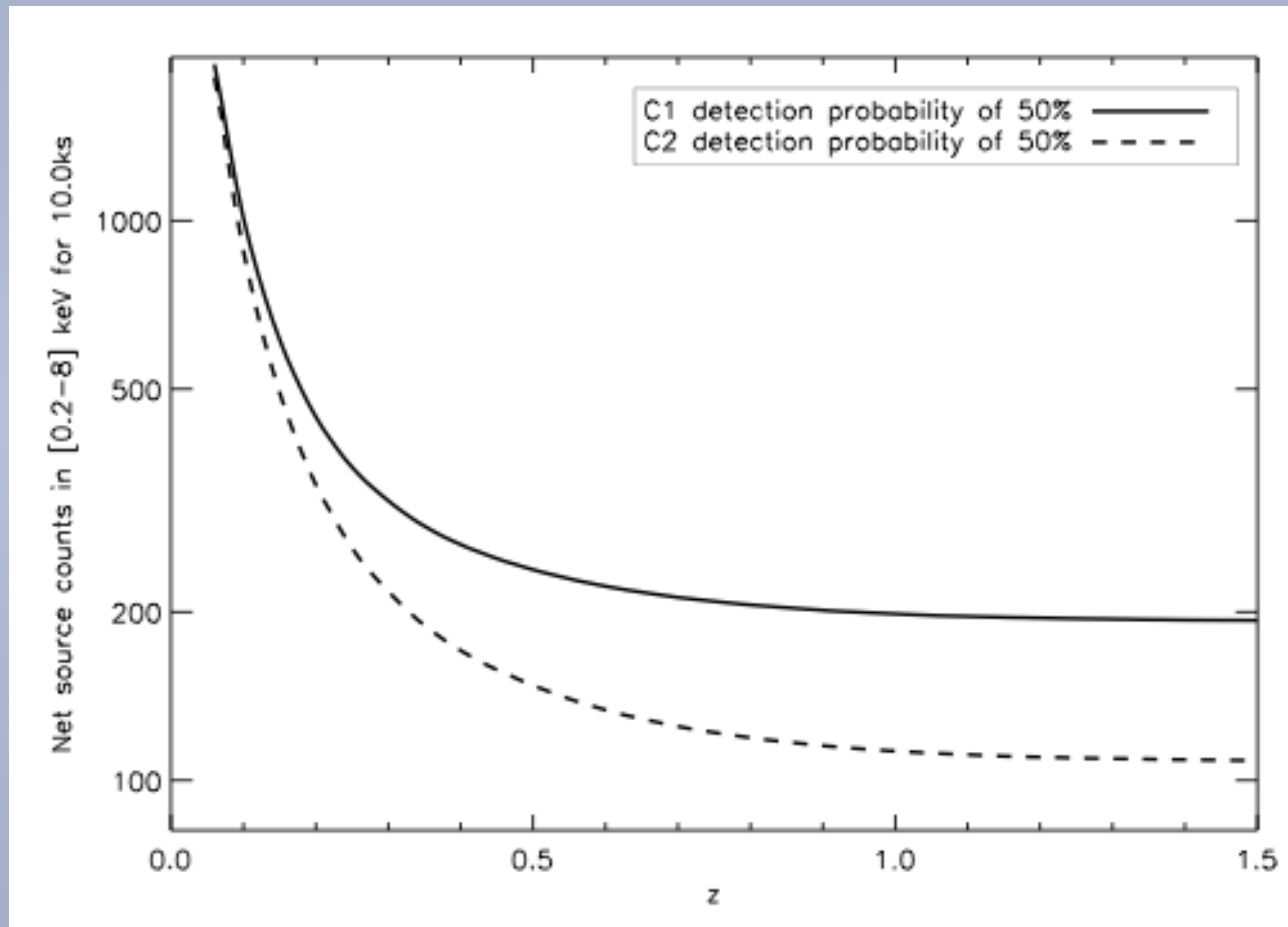
**Not a flux
limit !**



Pacaud et al 2006

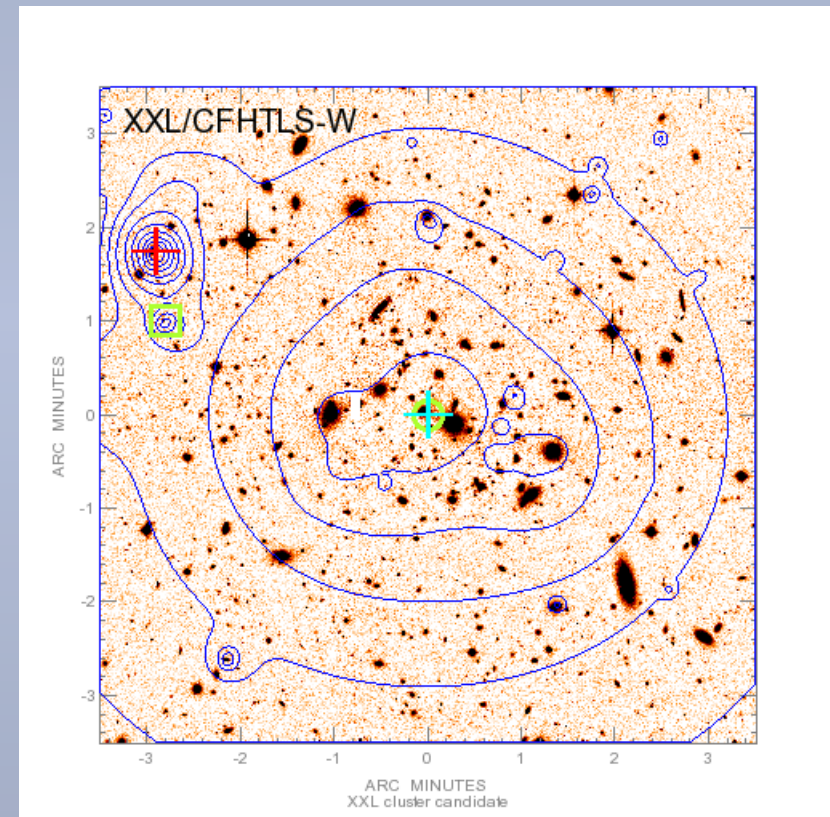
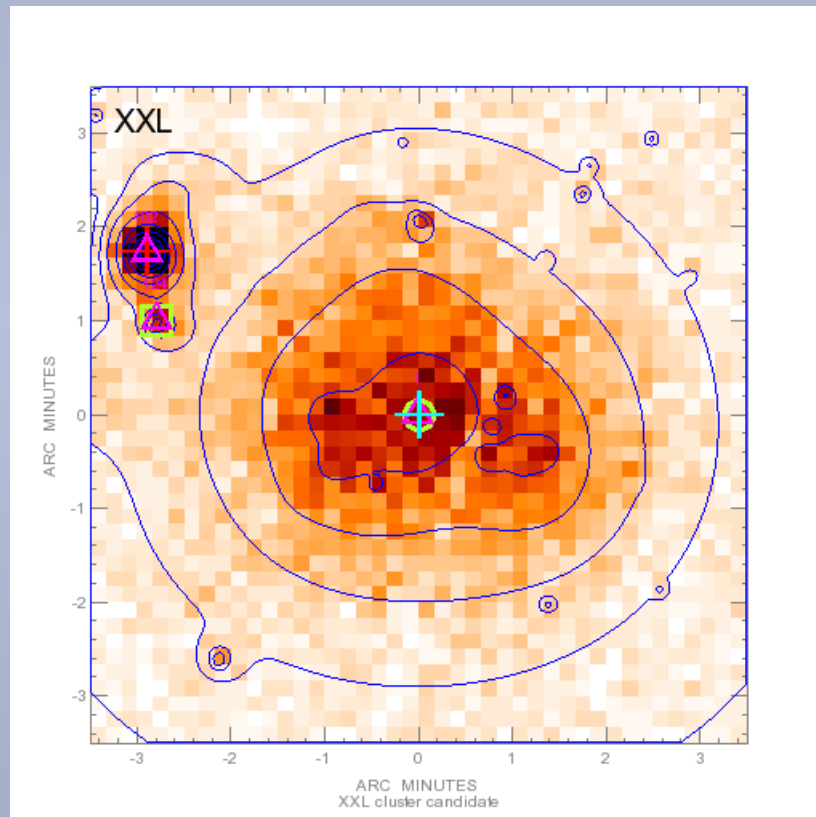
Sample properties

Global cluster properties



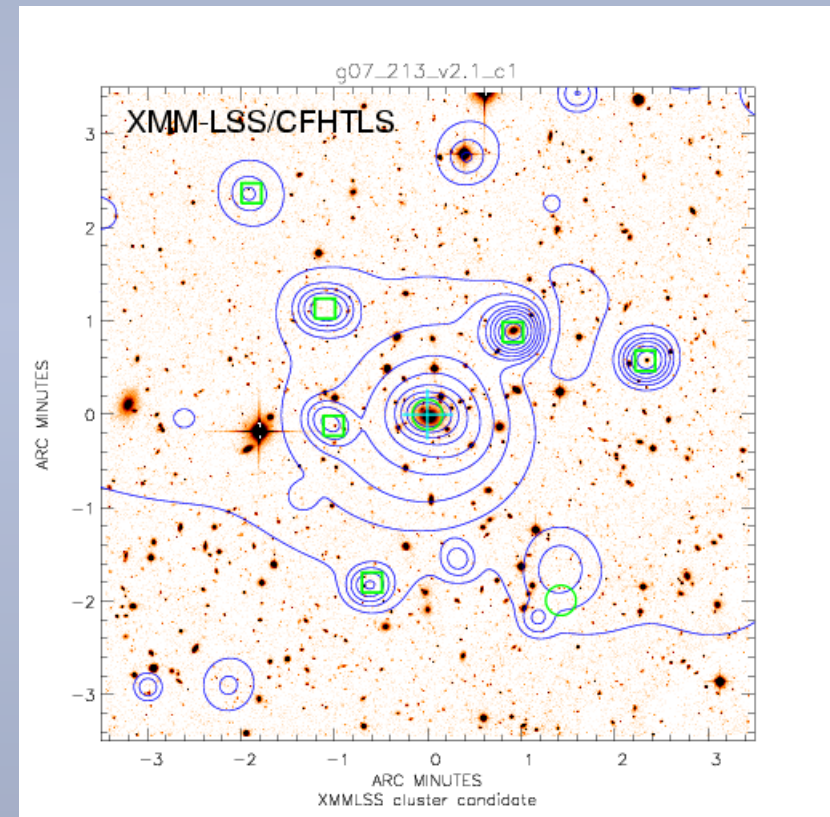
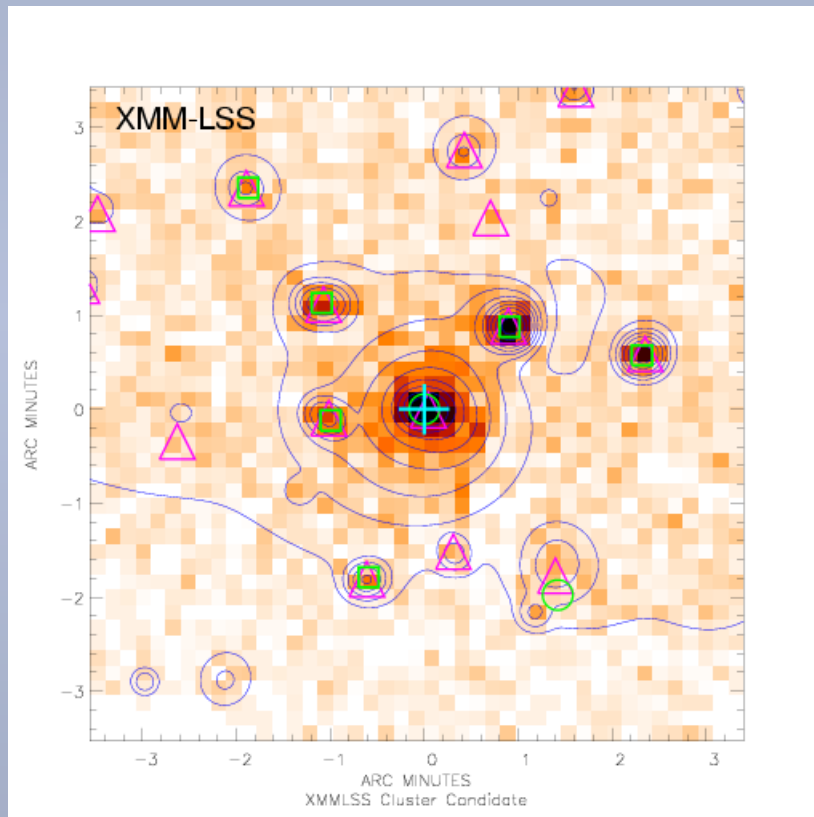
Example of XXL cluster detections

A362 : an extreme C1 at $z=0.18$



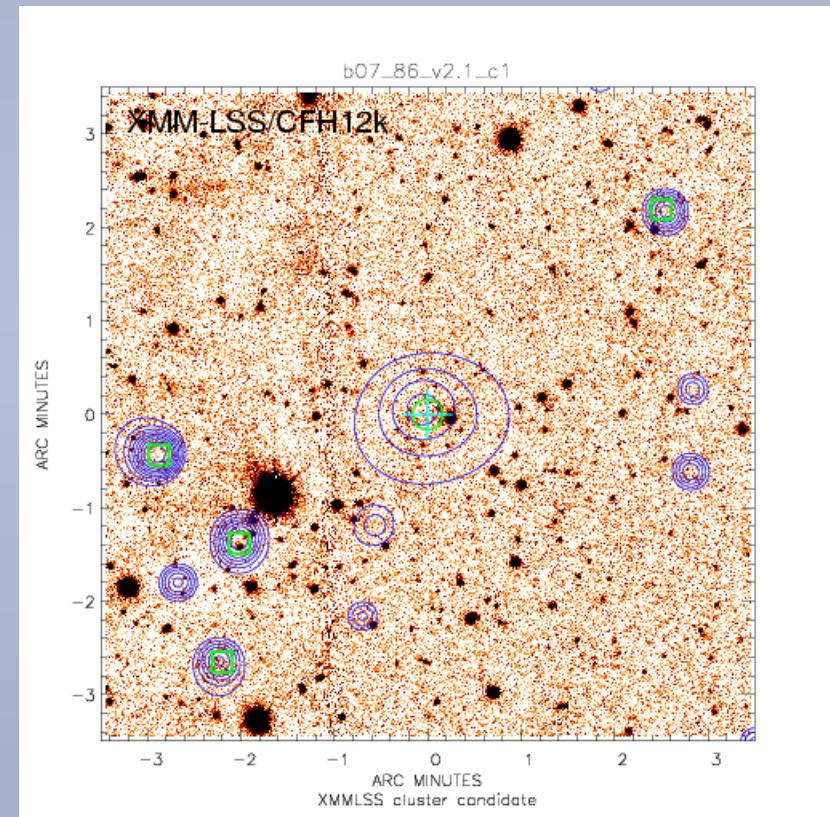
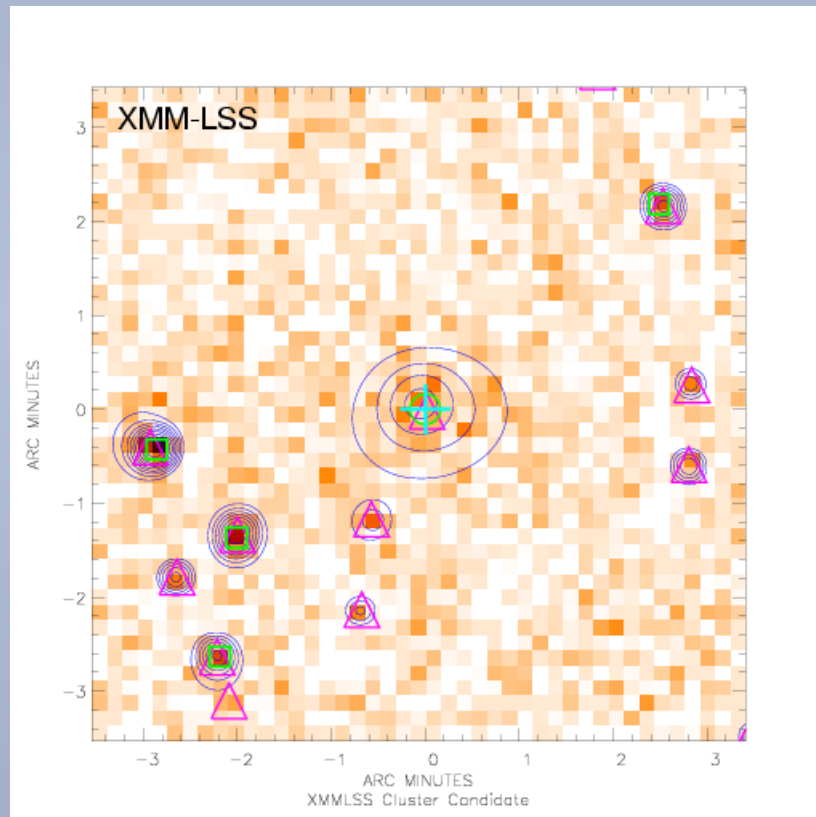
Example of XXL cluster detections

XLSSC 025 : a 'good' C1 at $z=0.27$



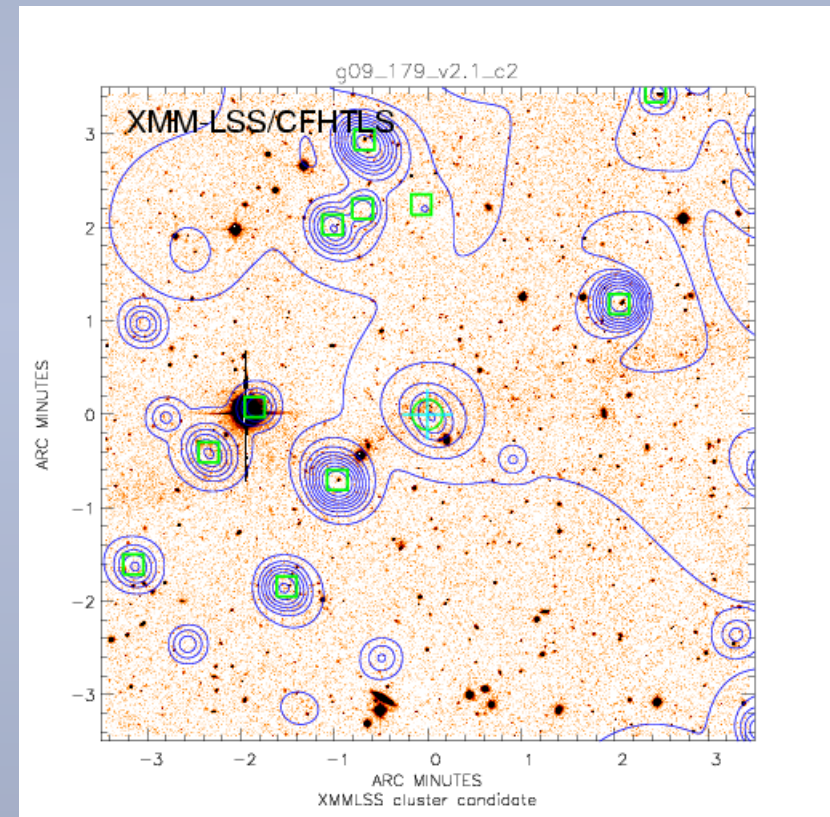
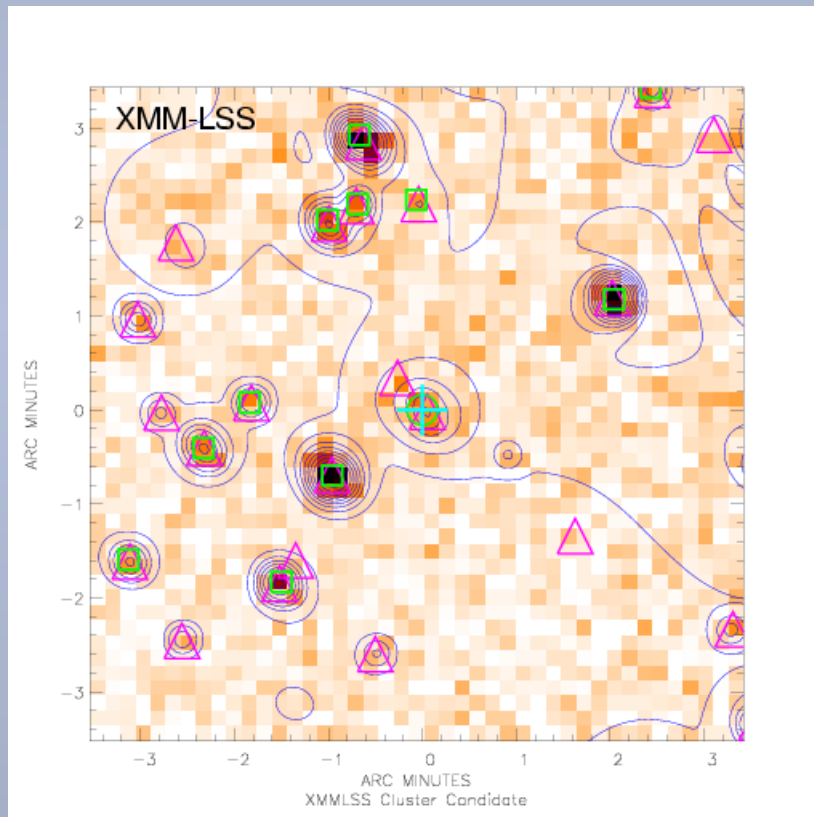
Example of XXL cluster detections

XLSSC 048 : a typical C1 at $z=1.00$



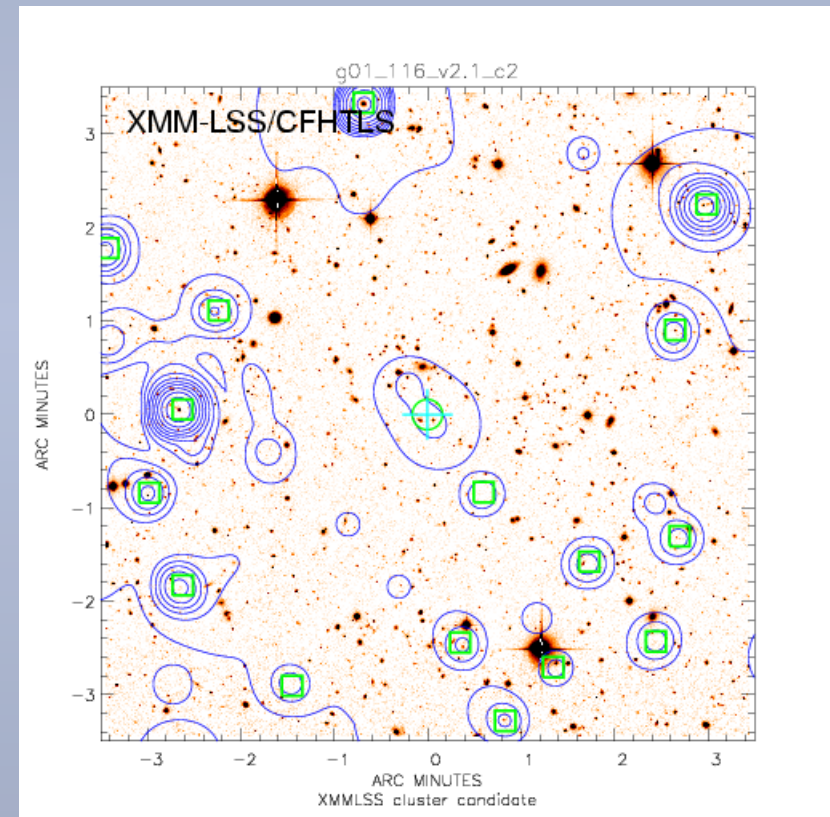
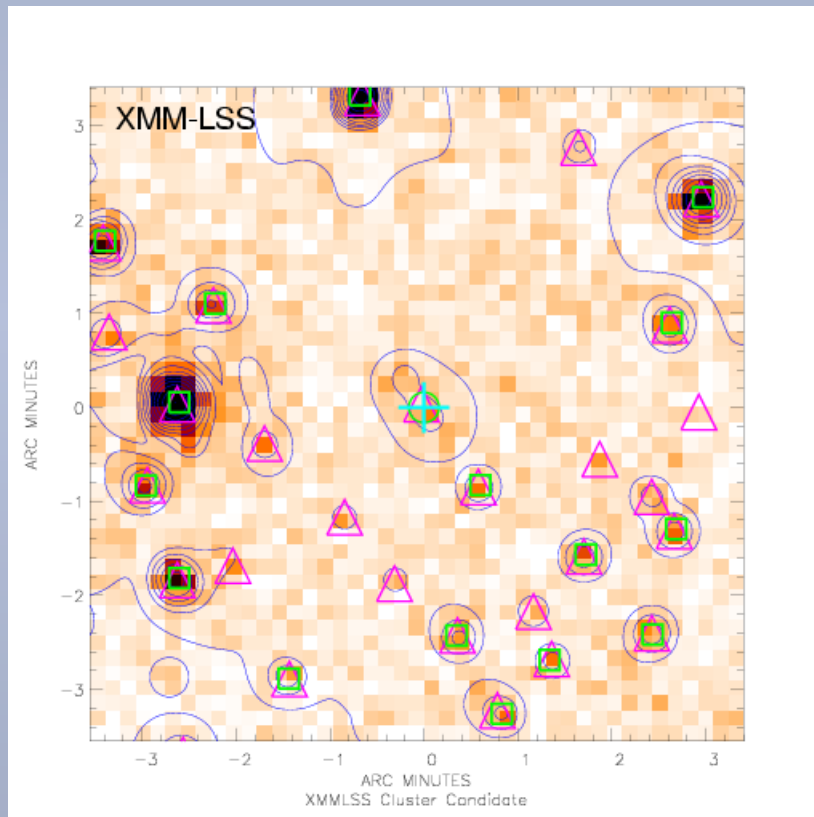
Example of XXL cluster detections

XLSSC 046 : a high-z C2 at $z=1.21$



Example of XXL cluster detections

XLSSC 038 : a low SB C2 at $z=0.58$



Example of XXL cluster detections

XLSSC 063 : a very compact C2 at $z=0.28$

