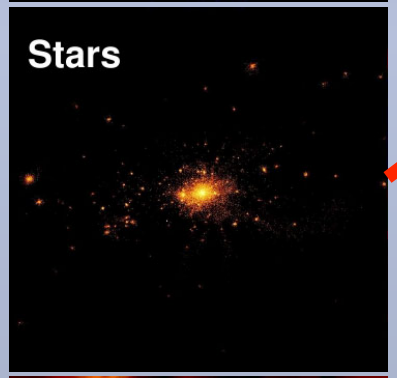
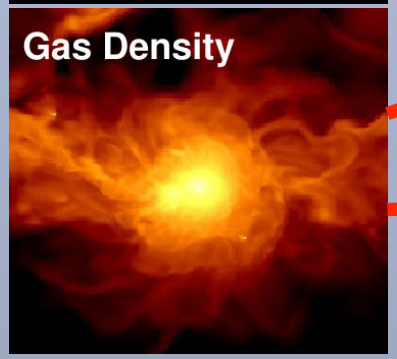
A glimpse at the XXL cluster properties

Florian Pacaud -2012-

What is a galaxy cluster ?

Simulated universe



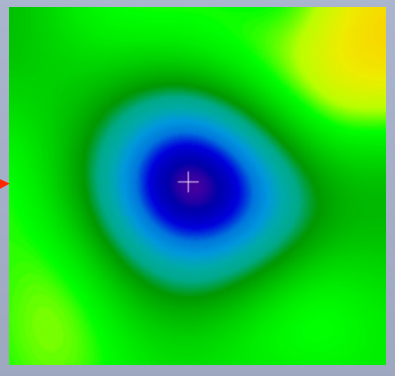


Real world

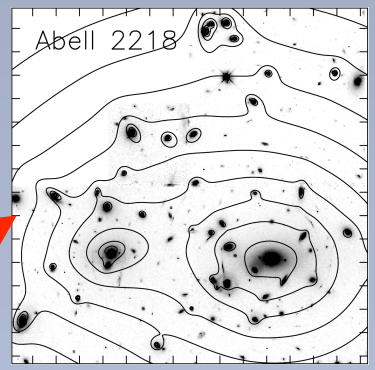
Opt./NIR

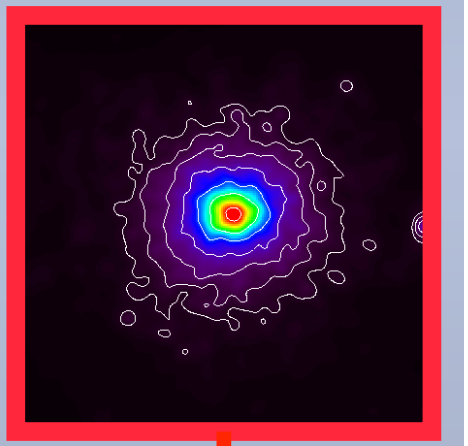
X-rays

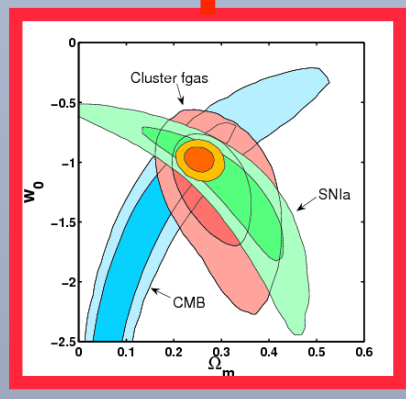
SZE



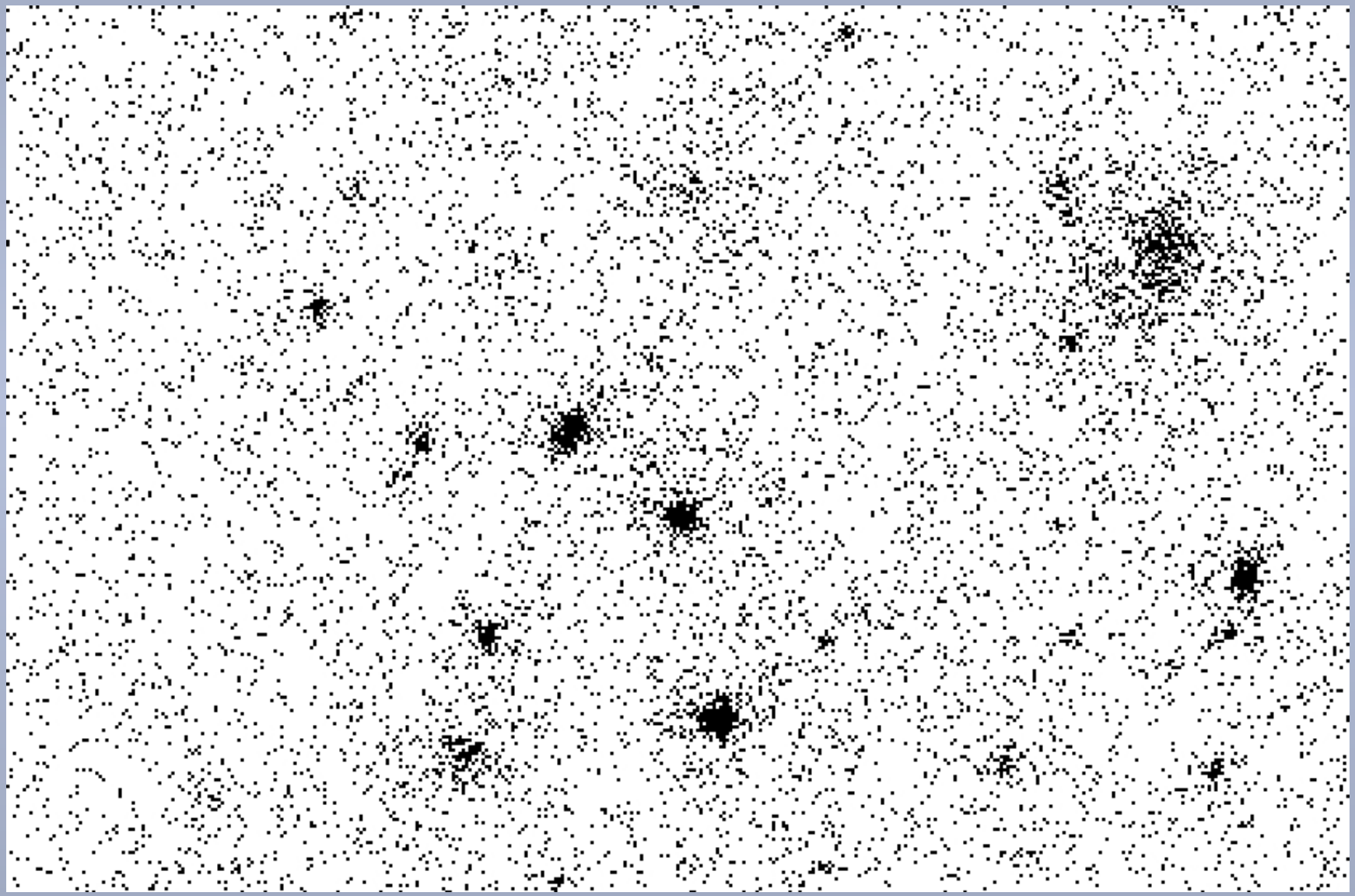
Lens.



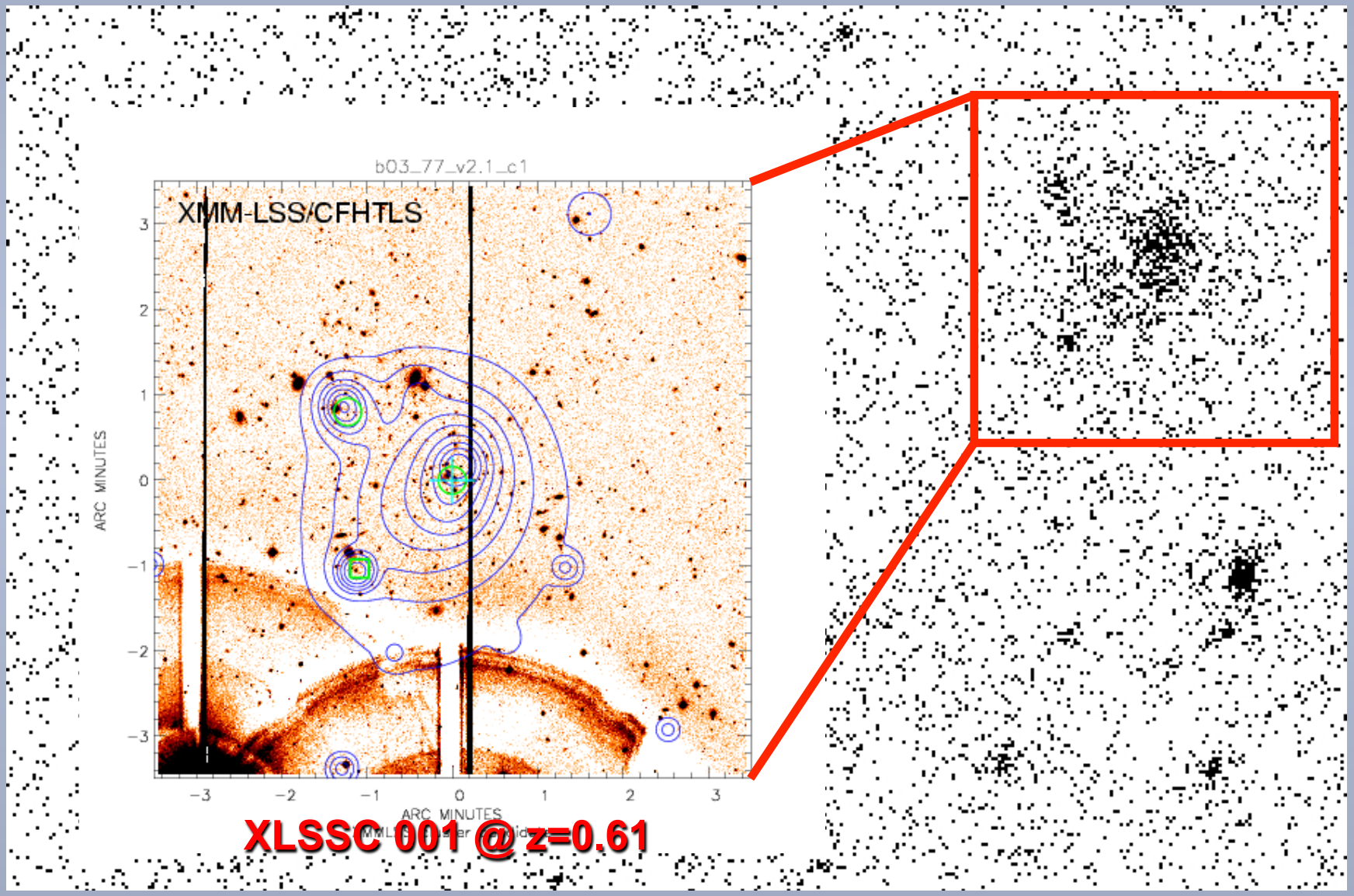




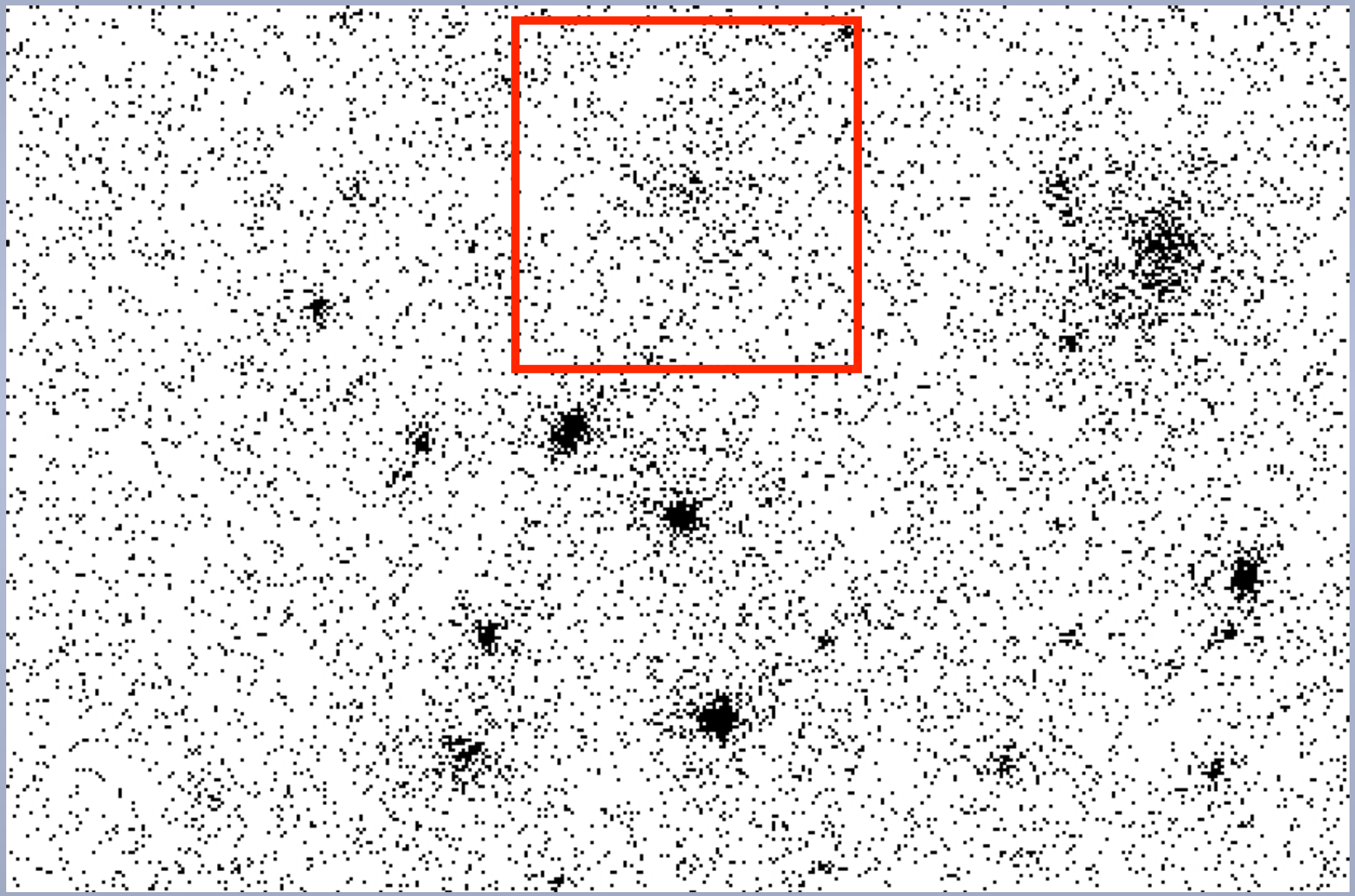
What is an XXL galaxy cluster ?



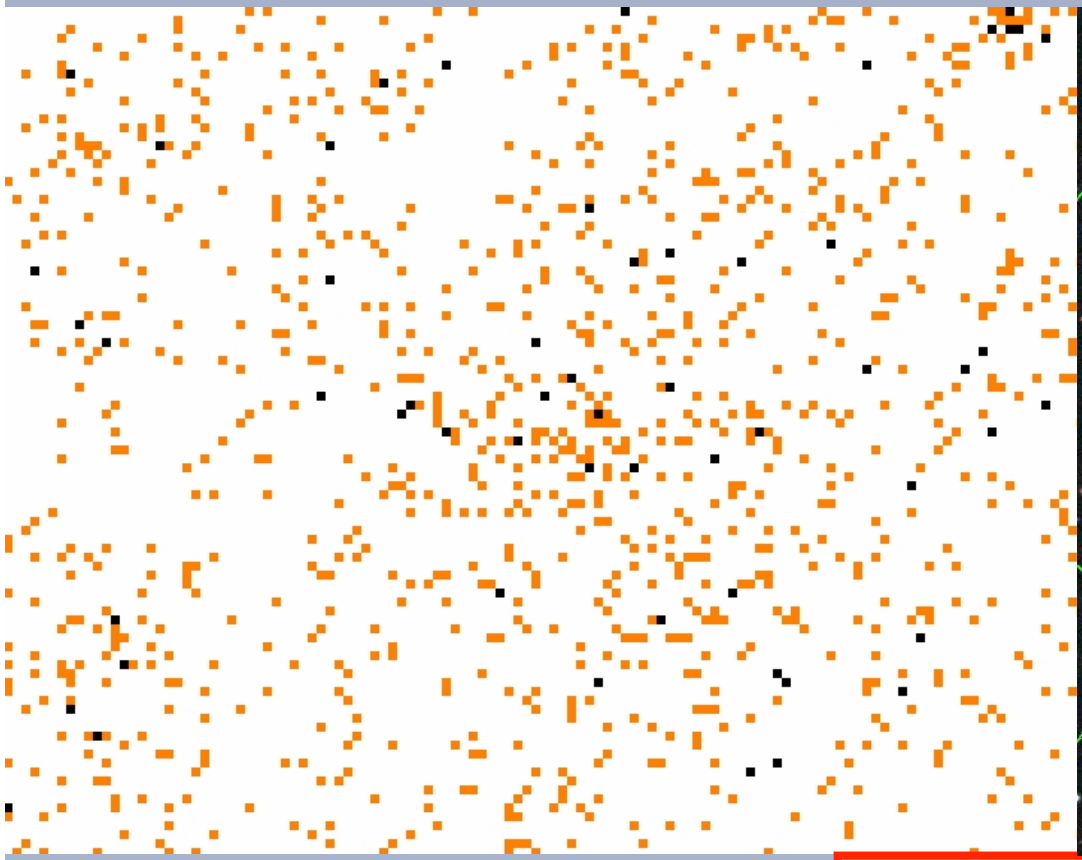
What is an XXL galaxy cluster ?

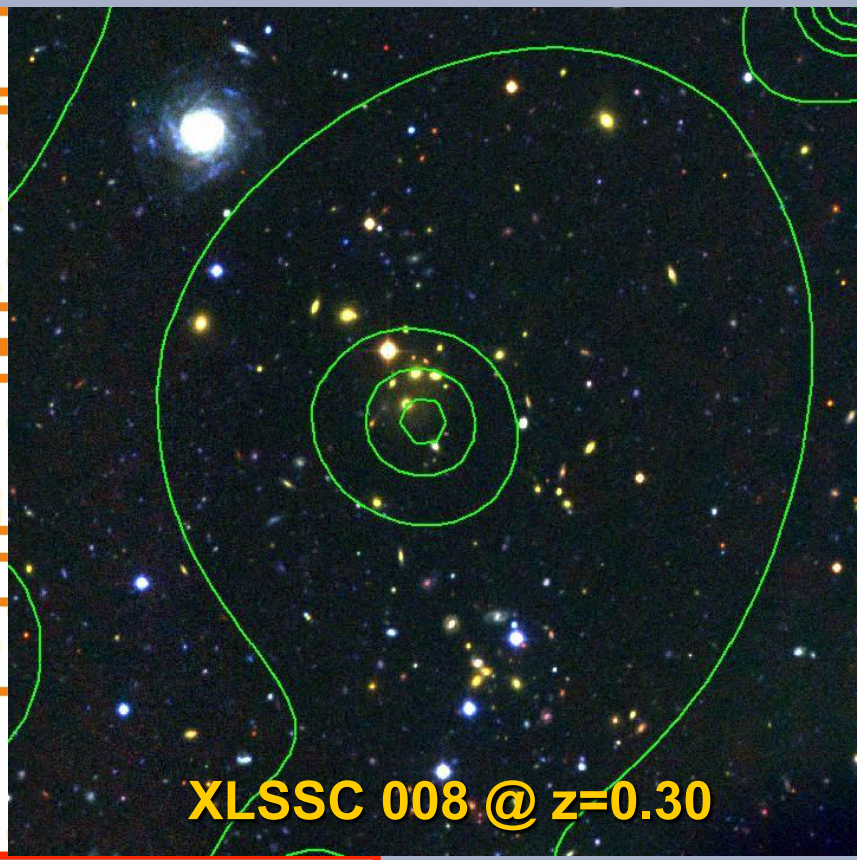


What is an XXL galaxy cluster ?



What is an XXL galaxy cluster ?





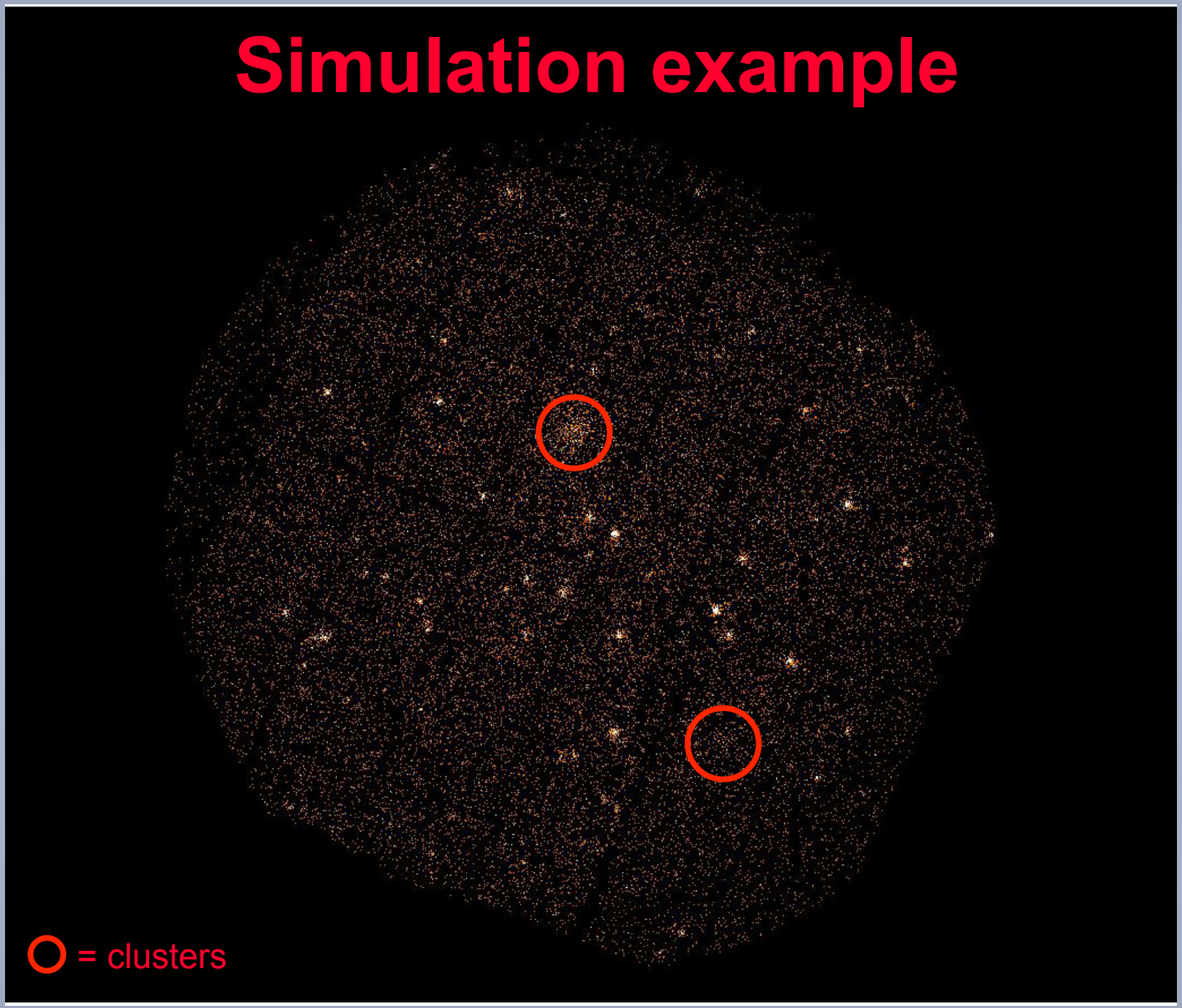
Working with such data is :

Difficult
Possibly confusing

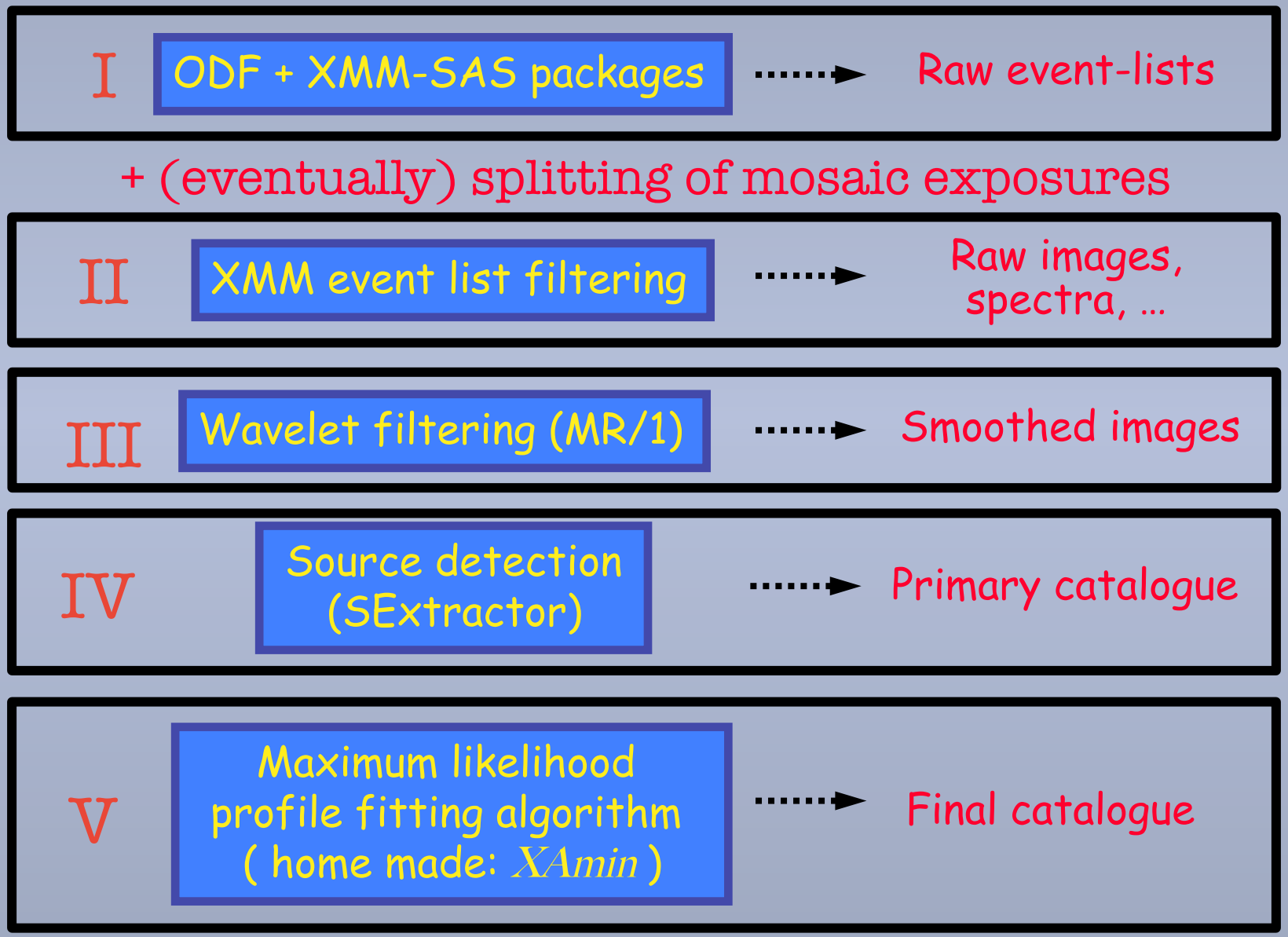
(very) ambitious
… but doable !

Detecting clusters

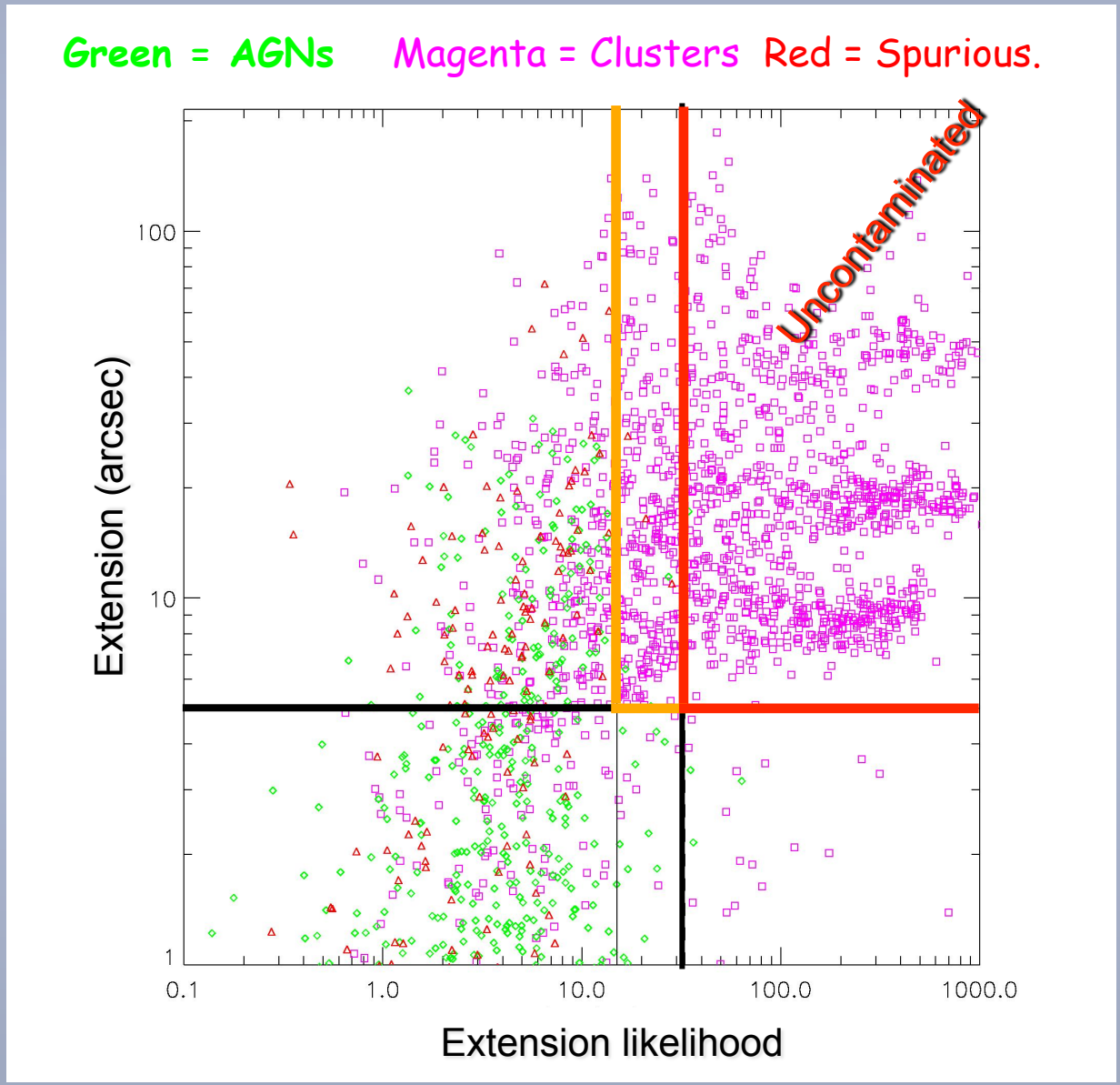
Simulation example



Pipeline design:



Selecting a cluster sample



- **C1:**

Uncontaminated

5-6 / deg²

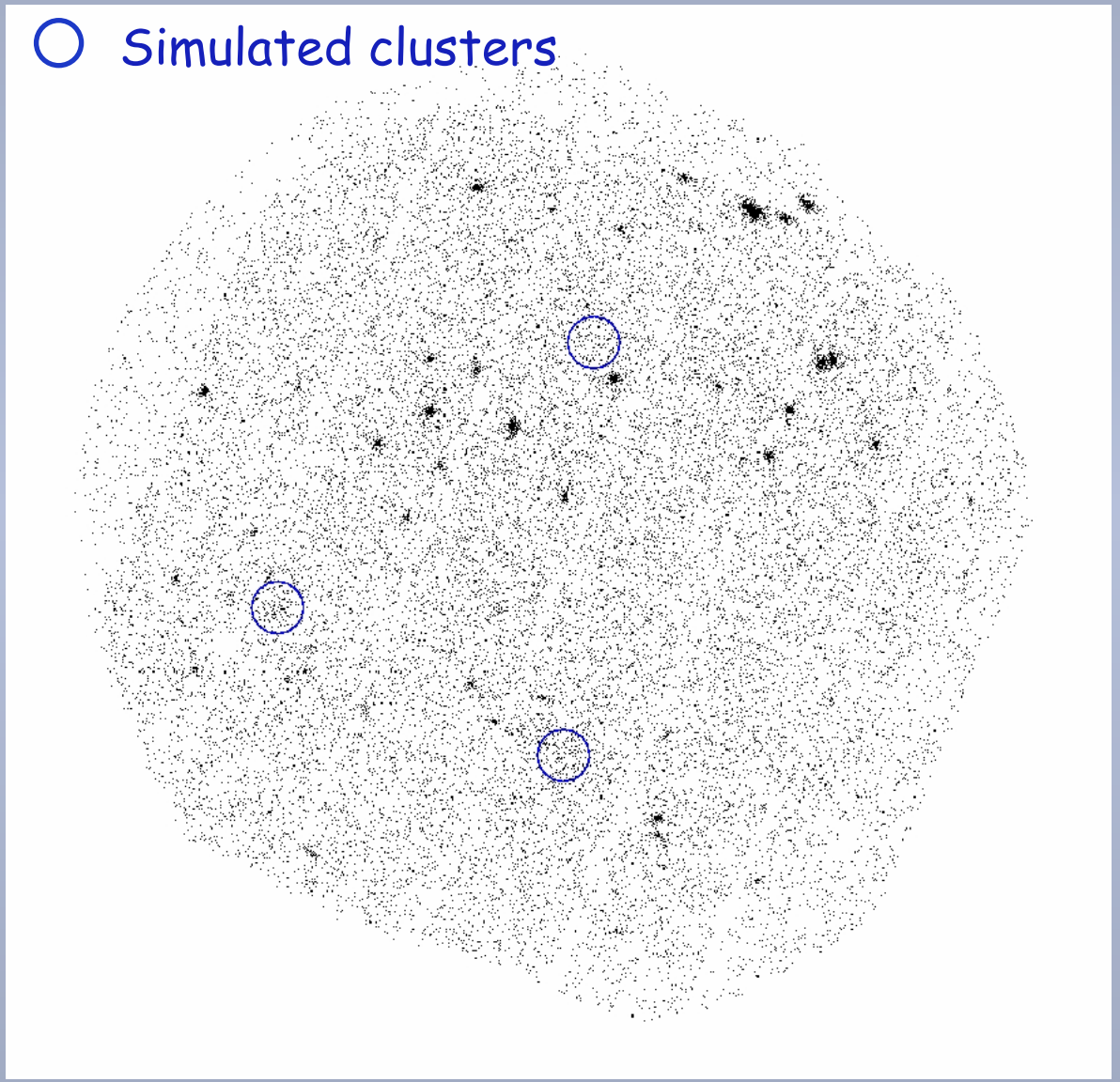
- **C2:**

50% contaminated but controlled another 5 / deg²

- **C3:**

Whatever remains ?? / deg²

Illustration with low S/N sources



3 clusters

Core radius = 50”

nb of photons

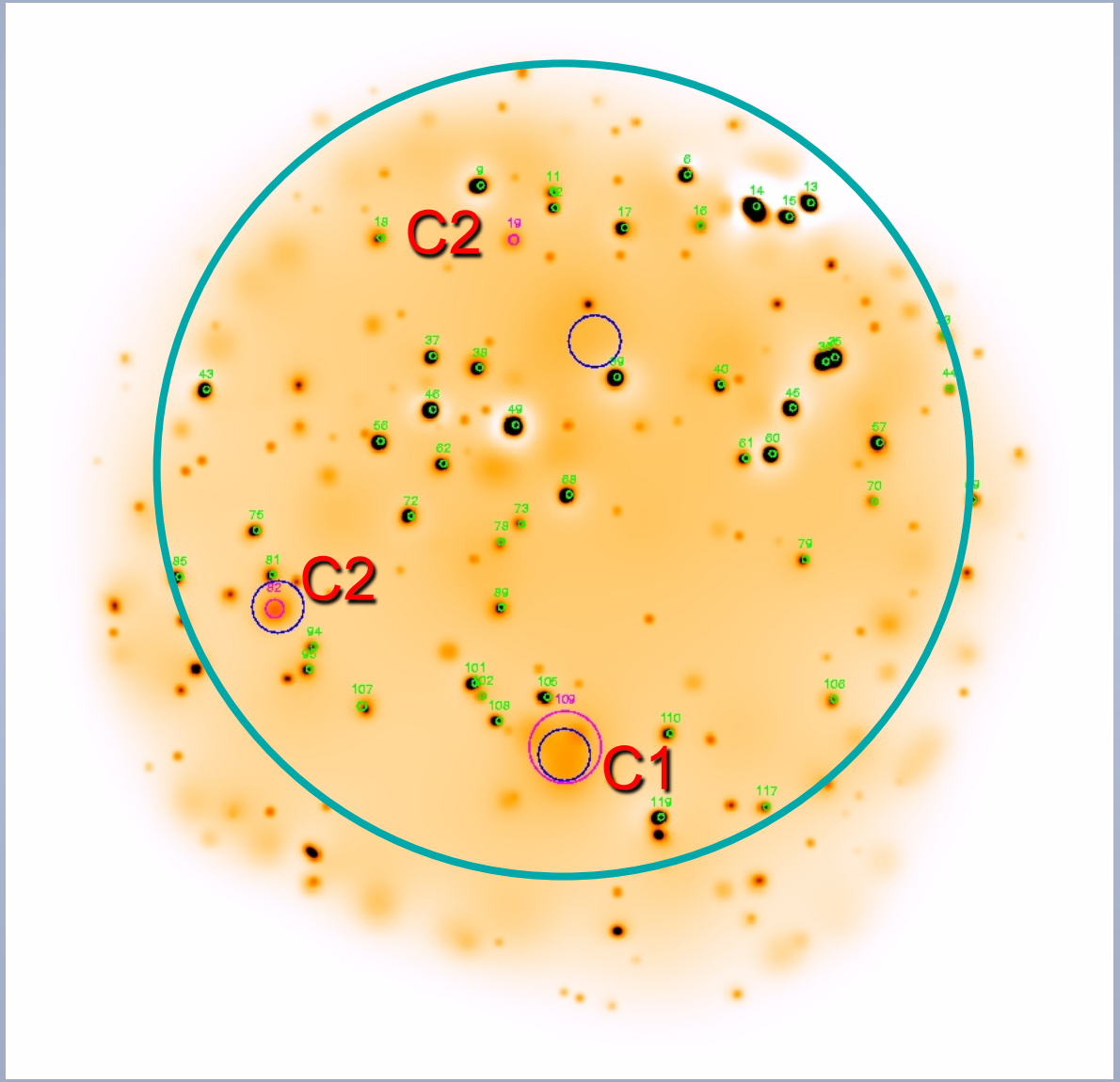
200 , 300, 500

x vignetting

Pipeline results

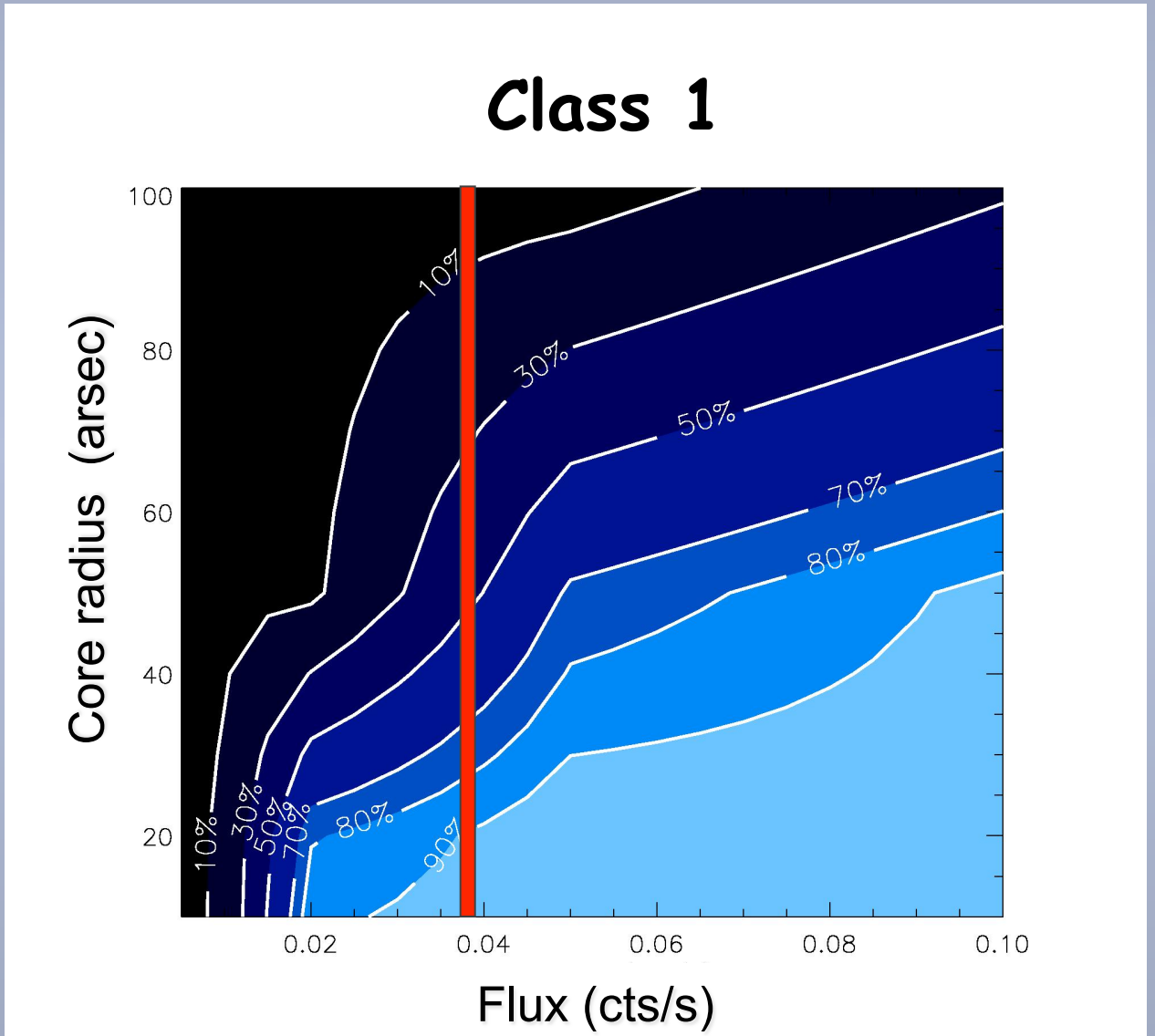
- Simulated clusters
- Detected clusters
- Detected AGNs

= detection mask



Detection rates

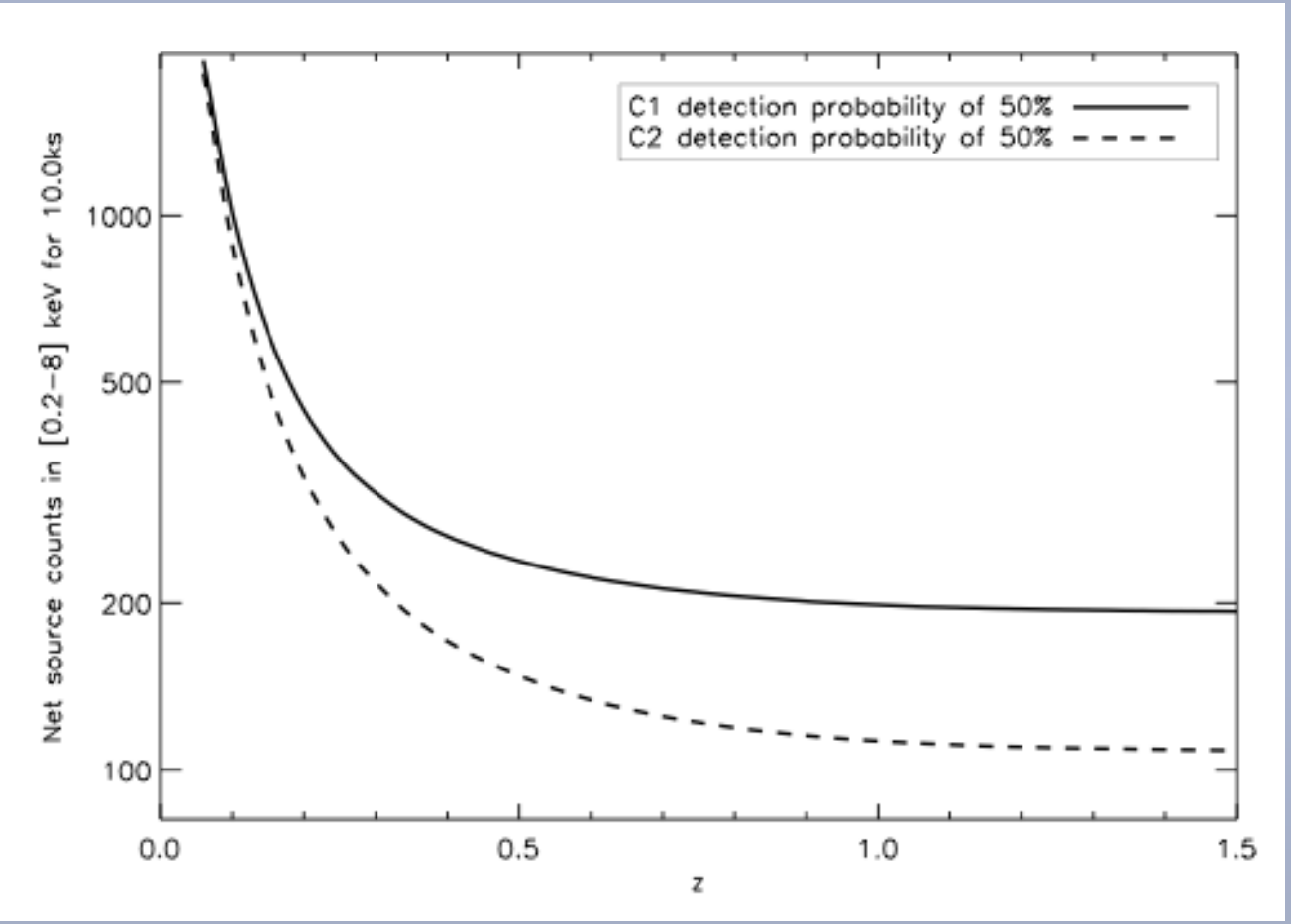
Not a flux limit !



Pacaud et al 2006

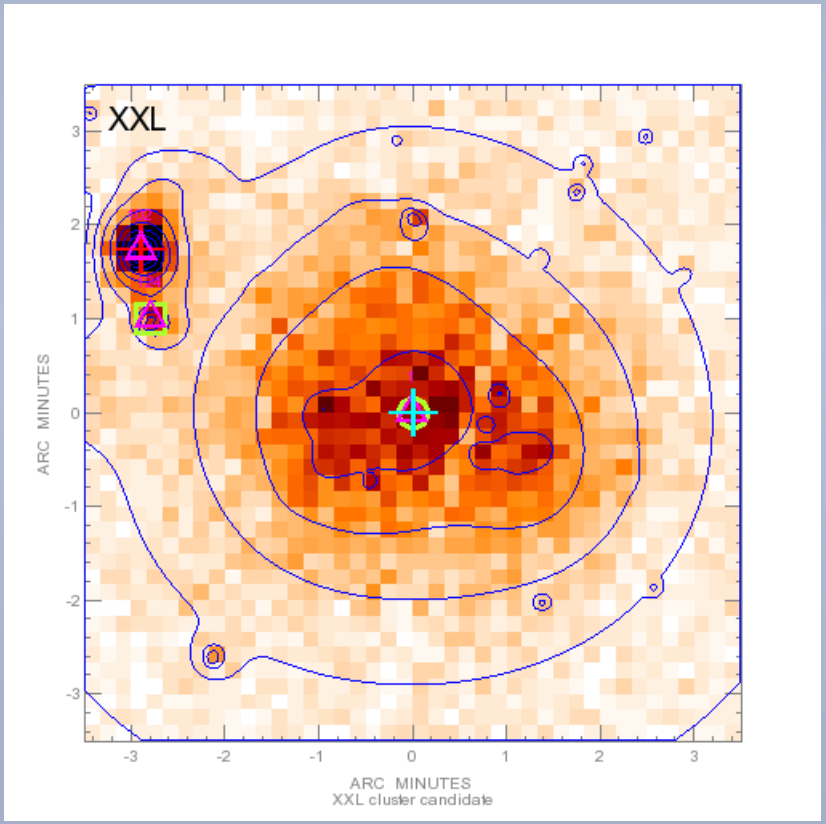
Sample properties

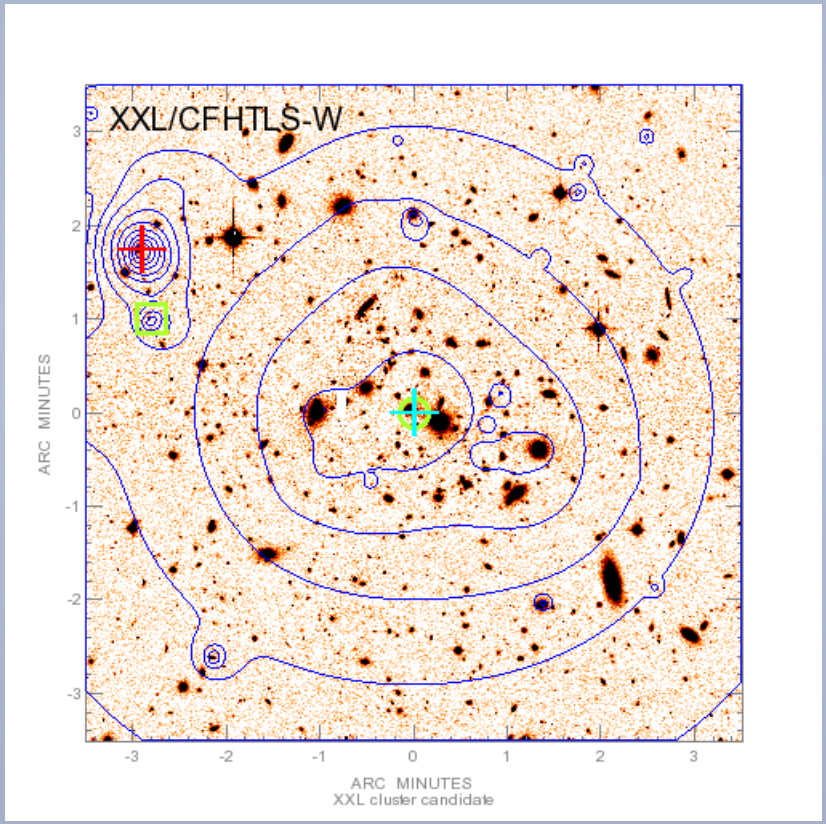
Global cluster properties



Example of XXL cluster detections

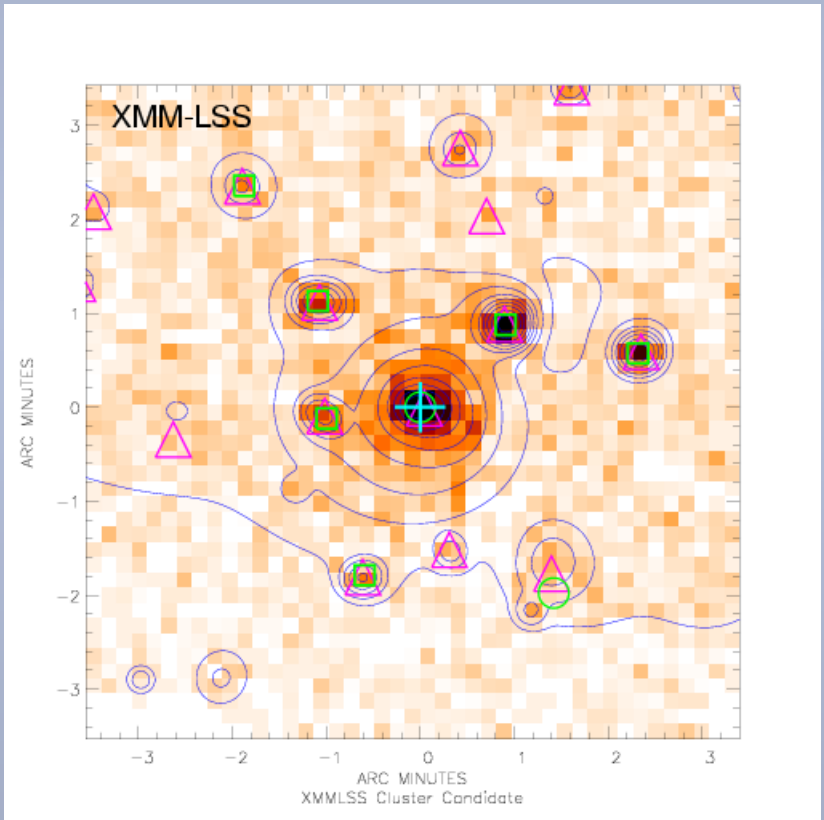
A362 : an extreme C1 at z=0.18

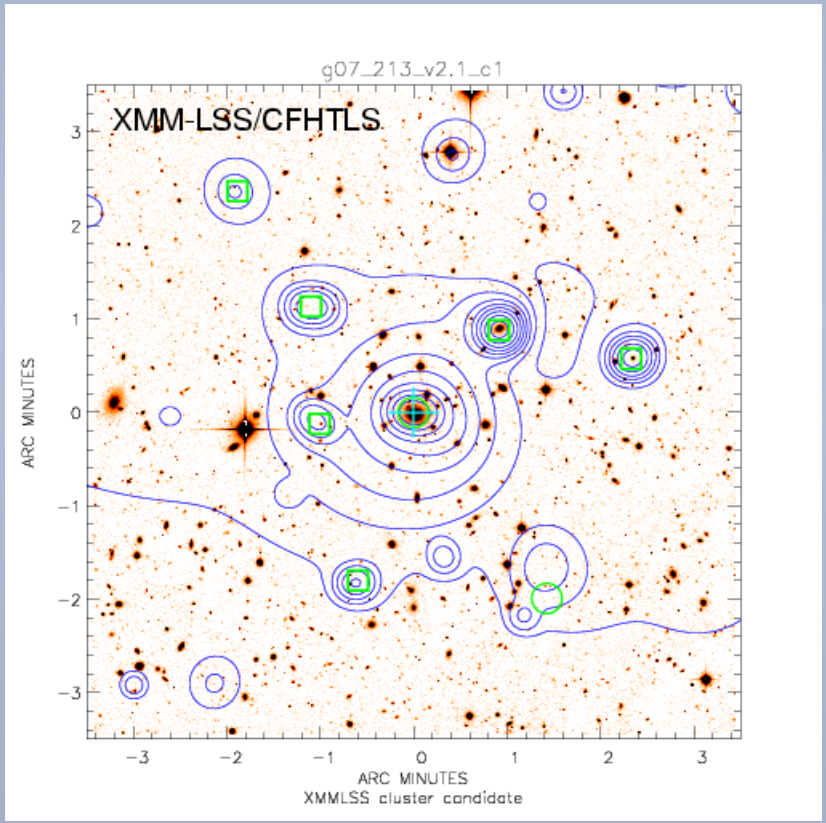




Example of XXL cluster detections

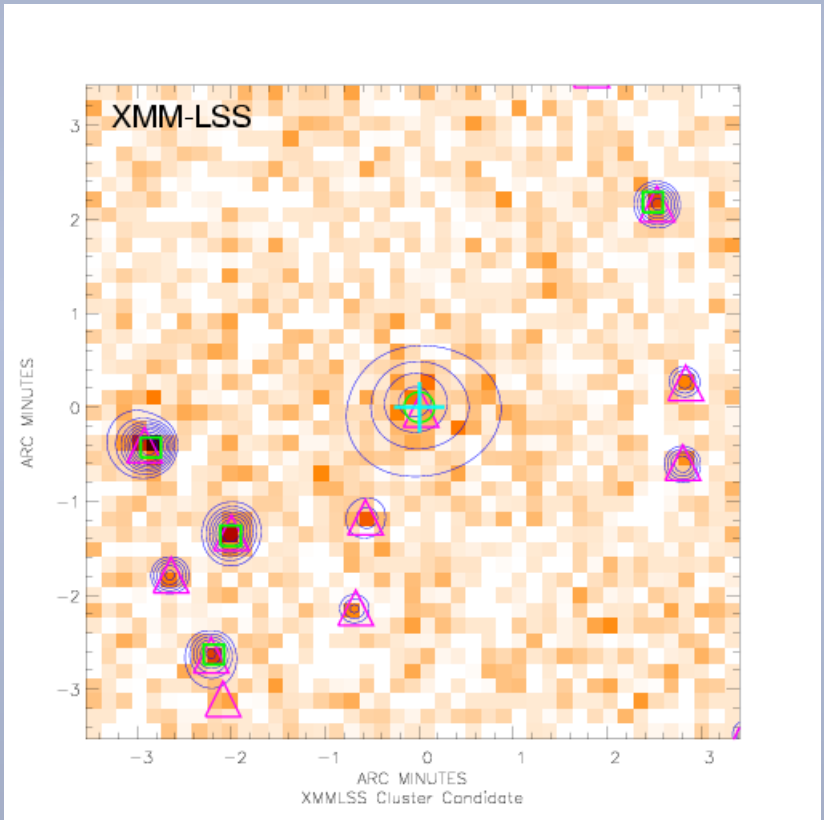
XLSSC 025 : a ‘good’ C1 at z=0.27

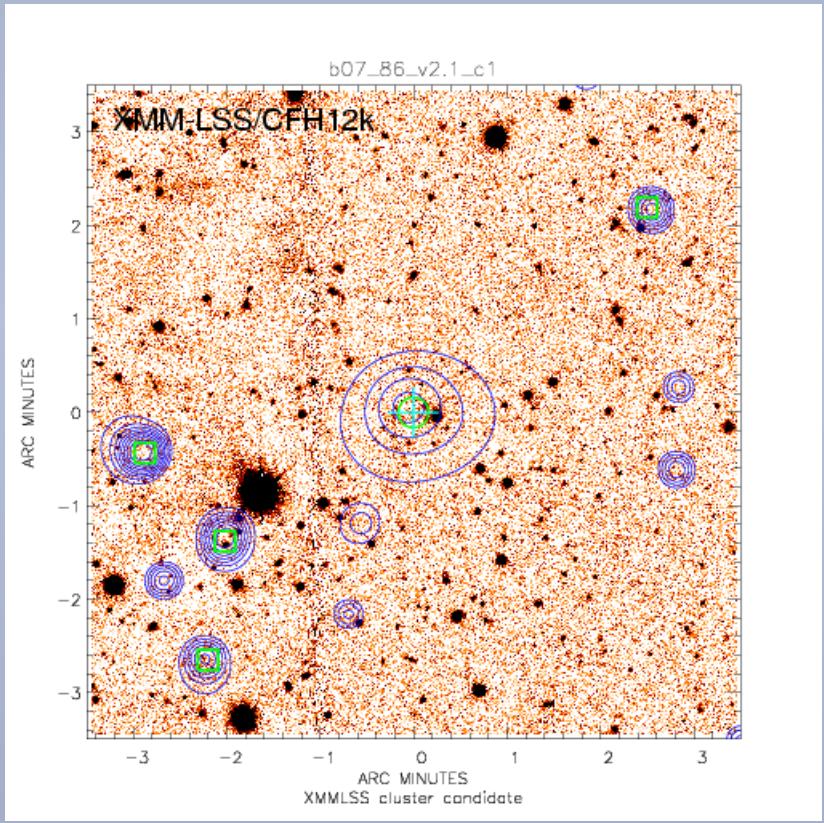




Example of XXL cluster detections

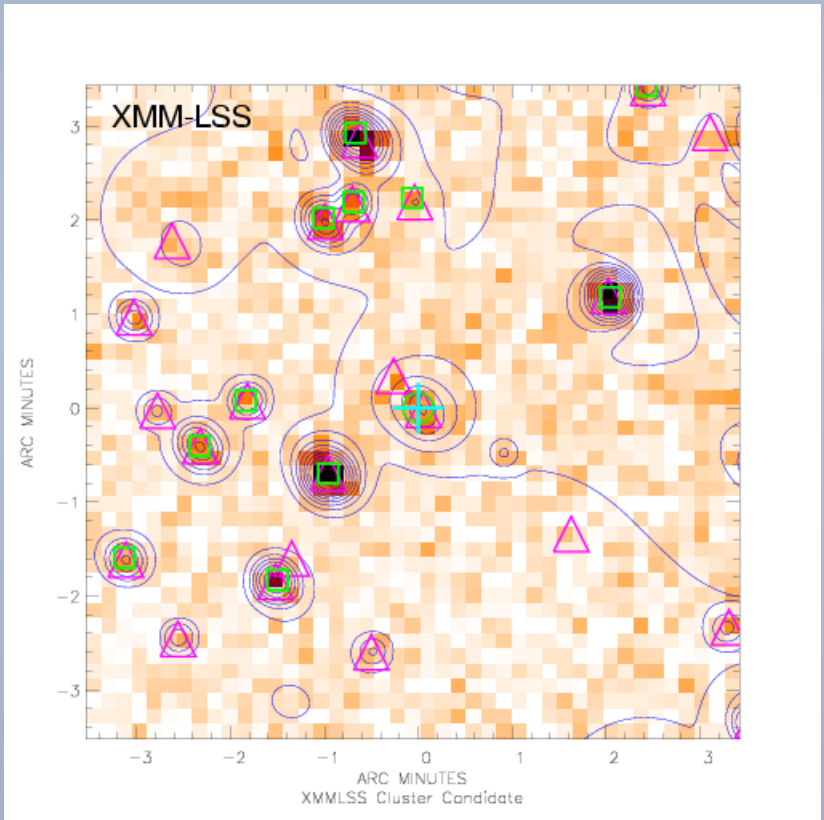
XLSSC 048 : a typical C1 at z=1.00

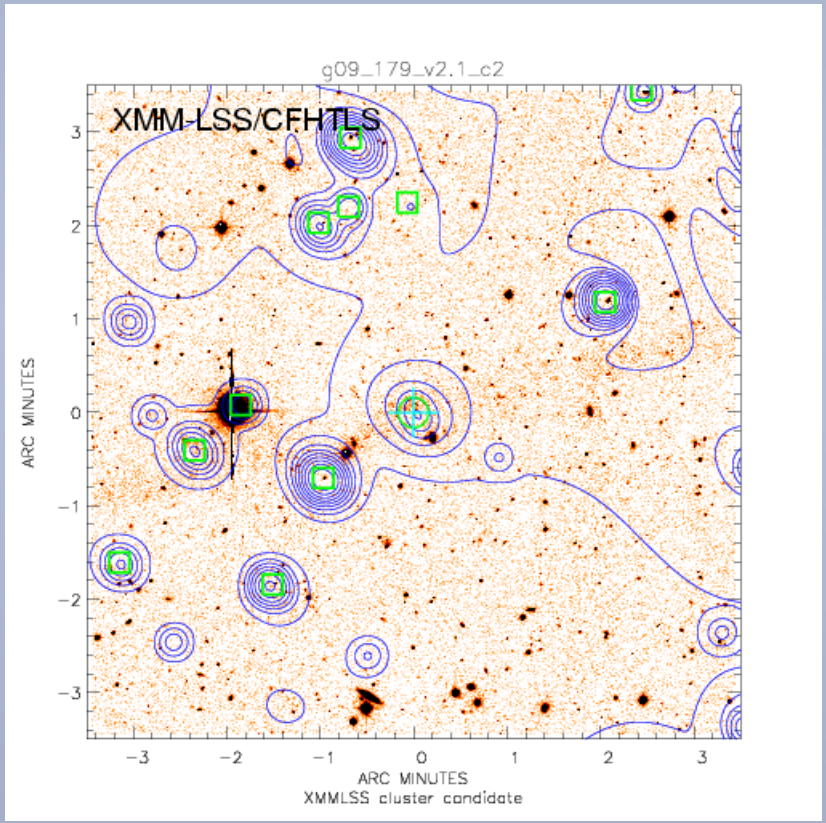




Example of XXL cluster detections

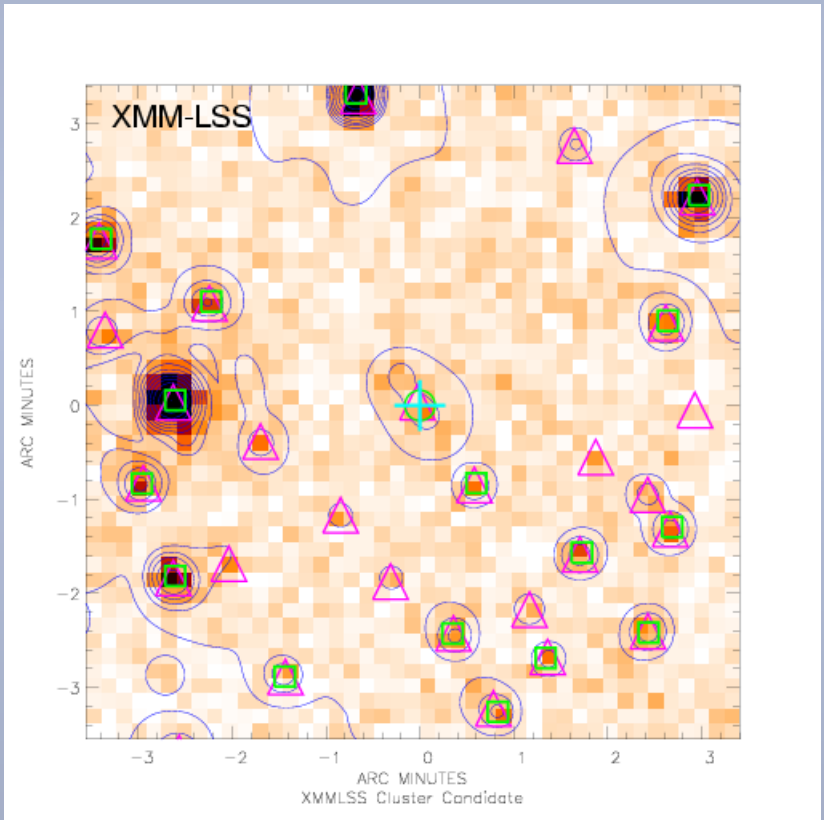
XLSSC 046 : a high-z C2 at z=1.21

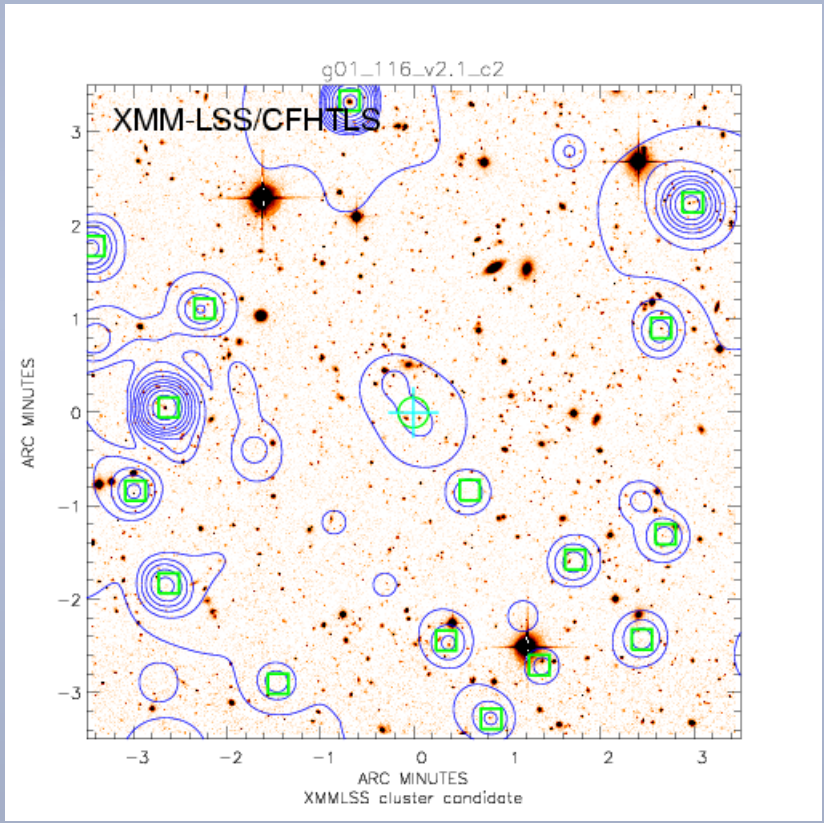




Example of XXL cluster detections

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