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X X L

The ultimate XMM extragalactic survey

die Kunst über in der Wissenschaft

XXL Projesi: Galaksi Kümeleri Taraması

Sinan ALİŞ

İstanbul Üniversitesi, Fen Fakültesi, Astronomi ve Uzay Bilimleri Bölümü

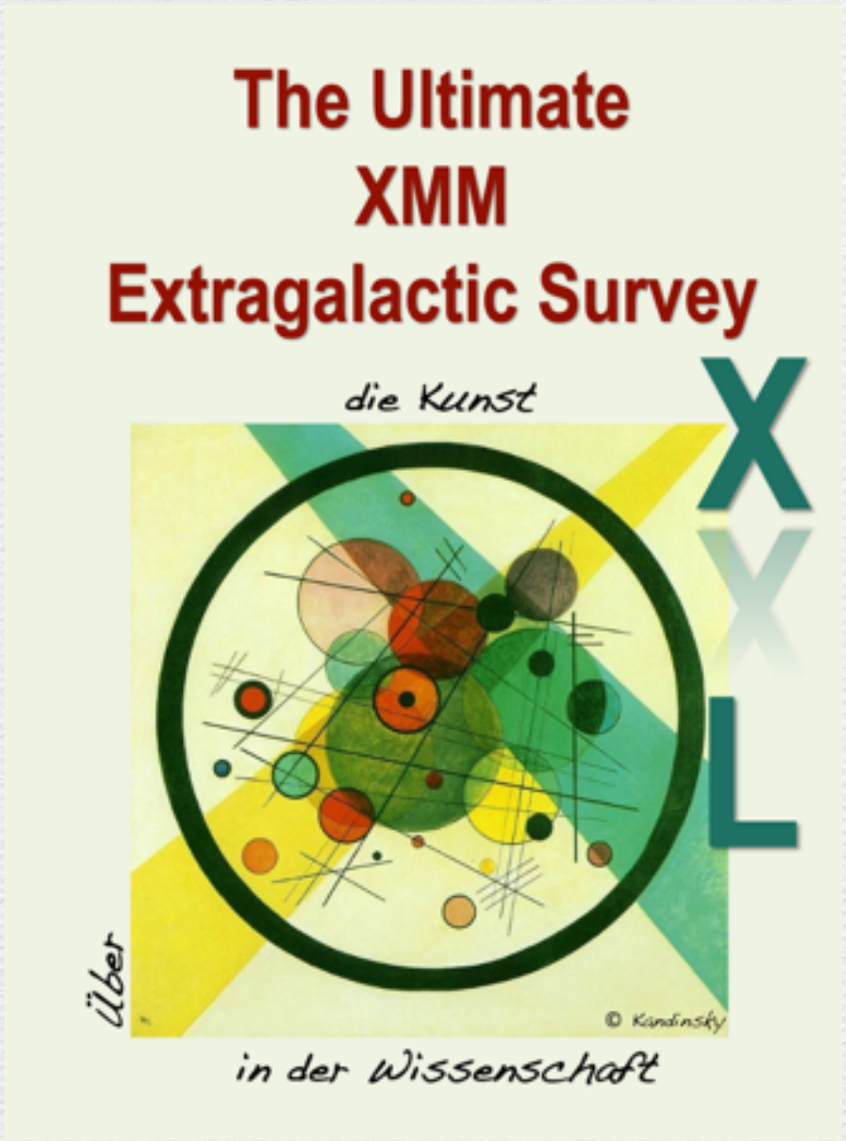
Laboratoire Lagrange, Observatoire de la Côte d'Azur

salis@istanbul.edu.tr

Christophe Benoist, Sophie Maurogordato

ve XXL Ekibi

XX. Ulusal Astronomi Kongresi, 5-9 Eylül 2016, Atatürk Üniversitesi, Erzurum

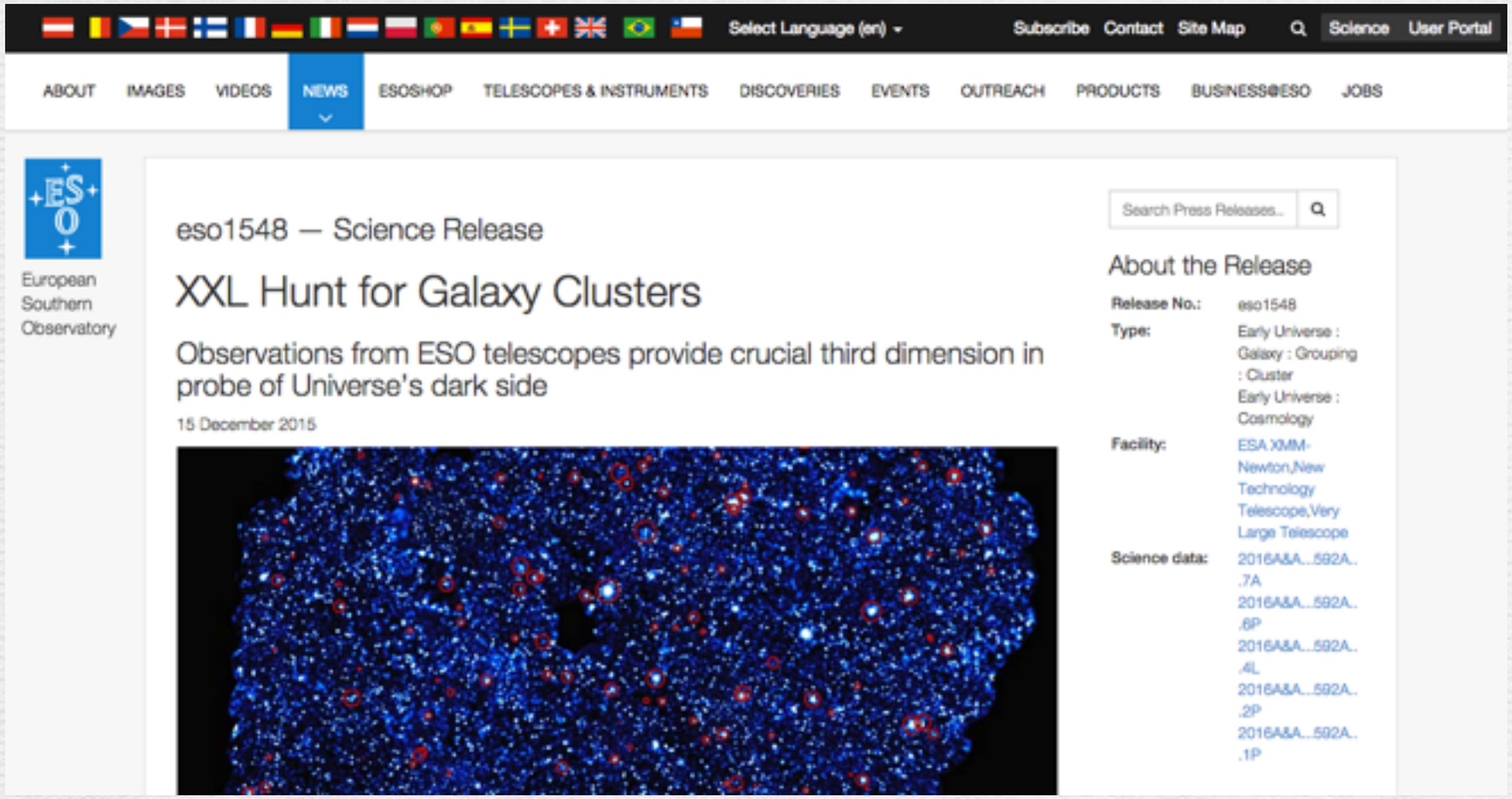


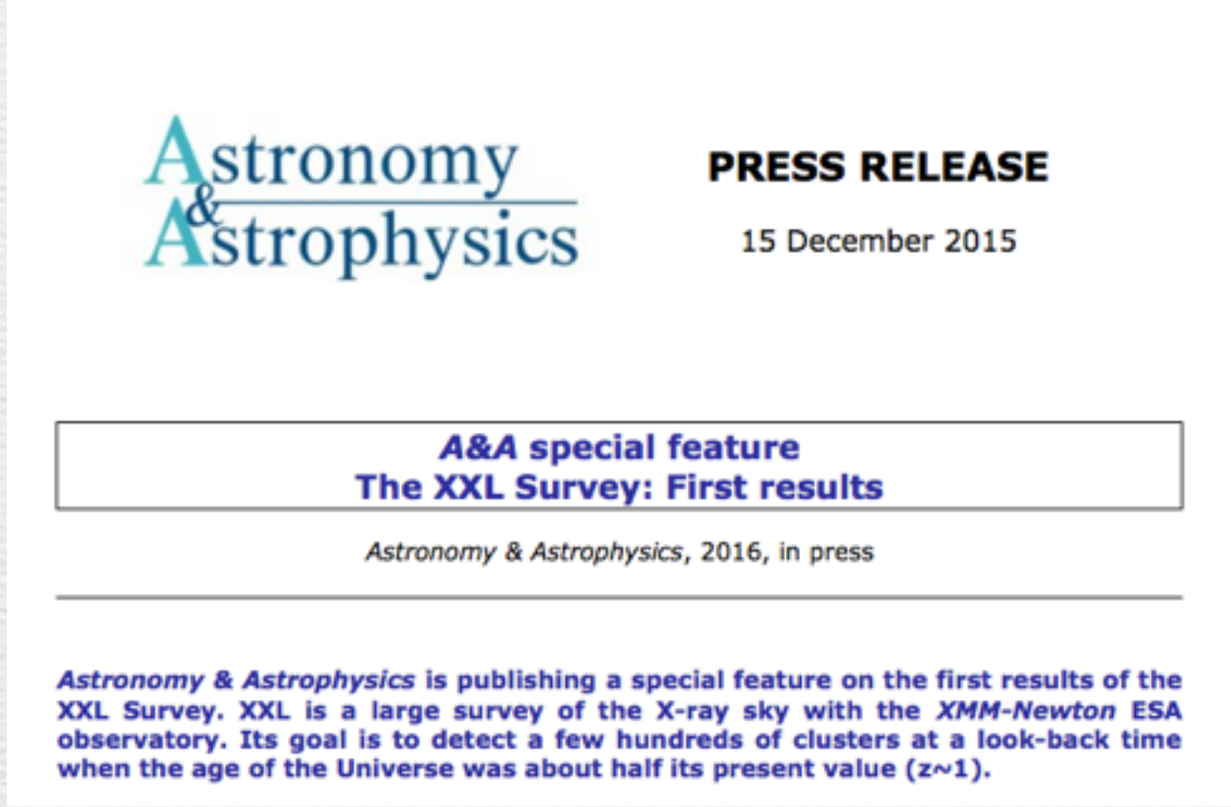
- 2 x 25 derecekarelik gökyüzü taraması
- XMM-Newton ile yürütülen en büyük proje (6.9 Ms)
- Moröteden radyo dalgaboylarına kadar takip gözlemleri
- 450 galaksi kümesi + 22000 AGN
- Uluslararası konsorsiyum; 100 biliminsanı

http://irfu.cea.fr/xxl

PI: M. Pierre

esa





XXL Survey

İlk Sonuçlar

15 Aralık 2015

A&A Vol. 592 - Özel Sayı

(Ağustos 2016)

13 makale

PASA Vol. 33

1 Makale

XX. Ulusal Astronomi Kongresi, 5-9 Eylül 2016, Atatürk Üniversitesi, Erzurum

The ultimate XMM extragalactic survey

die Kunst über in der Wissenschaft

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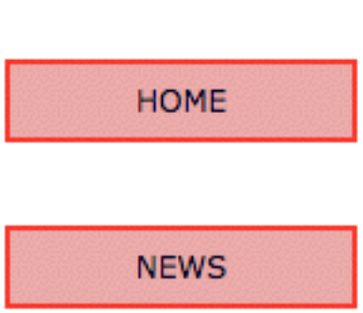

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Welcome to the XXL Master Catalogue browser

The XXL is a large international multi-wavelength survey covering two 25 deg^2 areas, the natural development of the XMM-LSS pilot survey. It is the largest XMM project approved to date.

A first batch of XXL papers is due to appear in a XXL special issue of A&A ! (see PR). Contextually, since 15 Dec 2015 the XXL database will be **open for public access.** **See the "News" button for more details.**

INAF IASF Milano has the responsibility to host the XXL Master catalogue database, as already done for XMM-LSS.

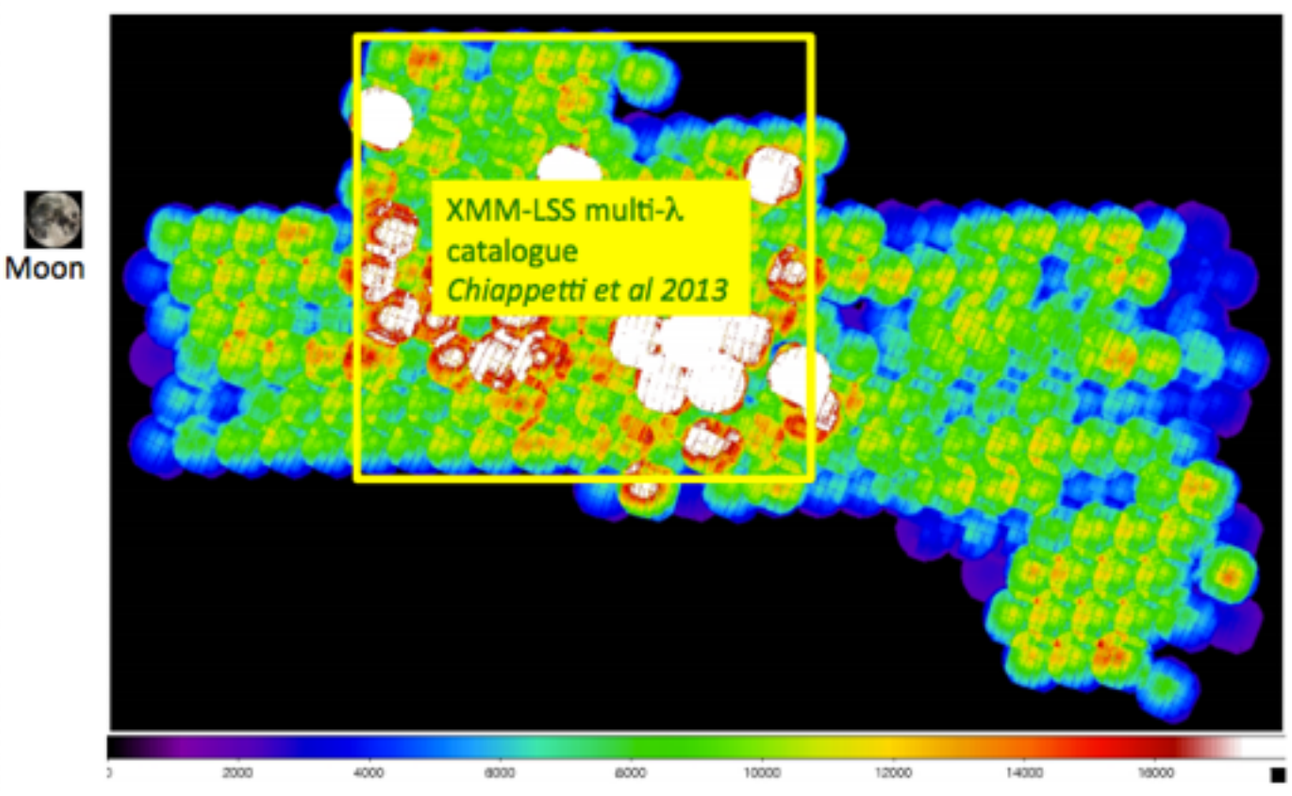
This interface will allow you to access the database, once you have logged in via the *login button* in the *side bar*. The *help button* gives access to extensive help about the usage of the interface. First time users will find **initial instructions** pressing the *news button*.

http://cosmosdb.iasf-milano.inaf.it/XXL/

XXL-N ve XXL-S

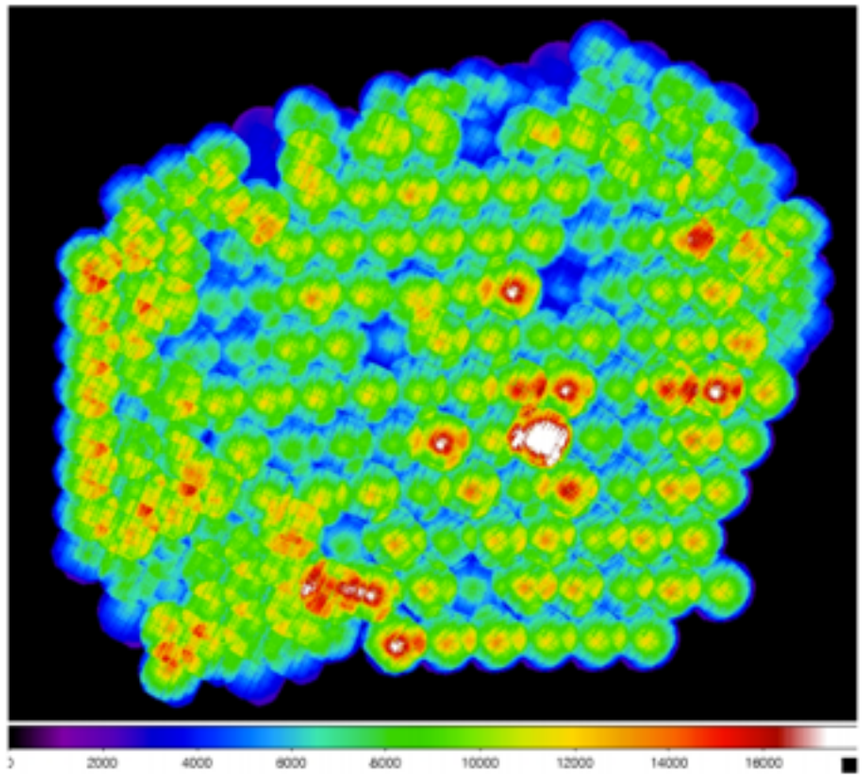
25 deg² in CFHTLS-W1 2h23 -5d00

(extension of the XMM-LSS field)

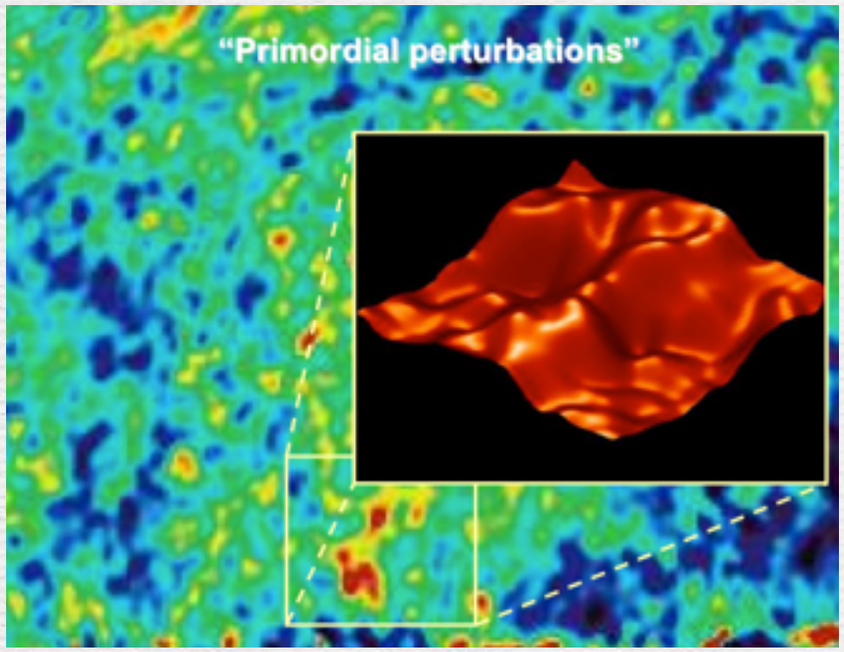


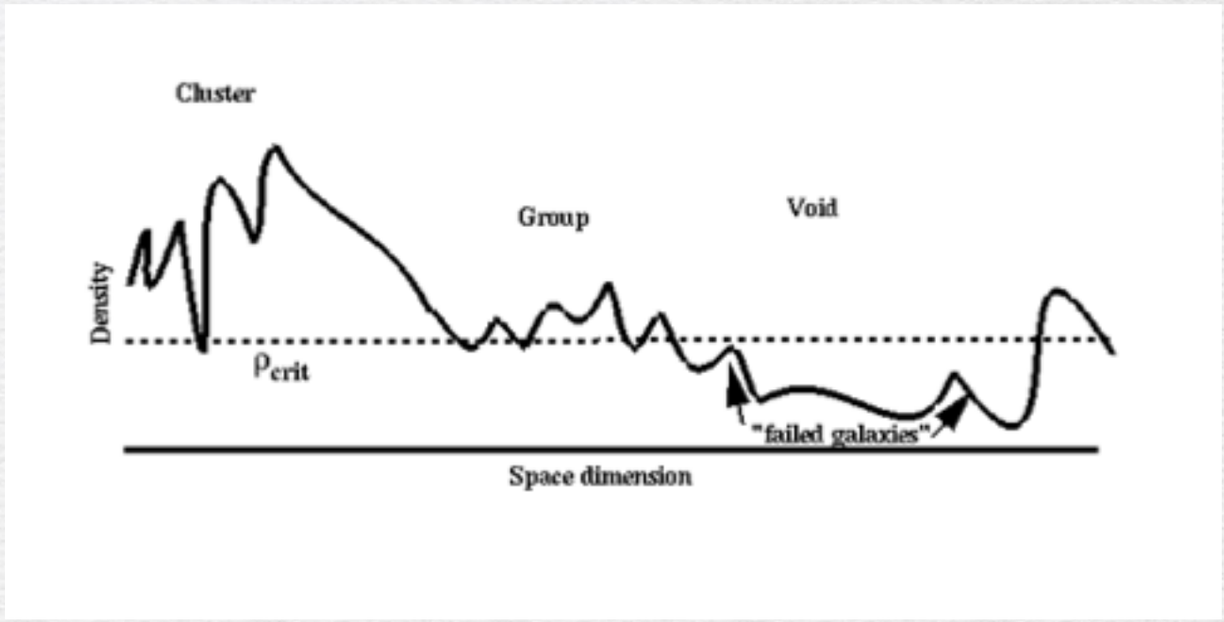
25 deg² in BCS 23h30 -55d00

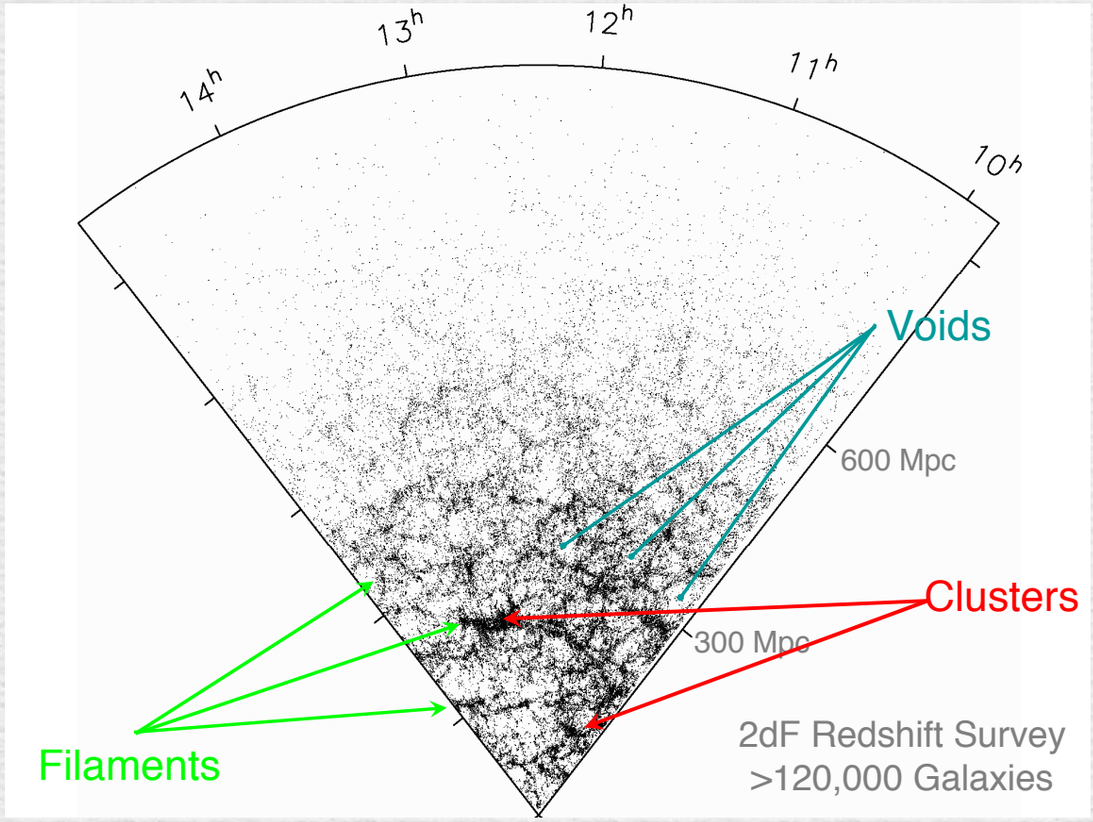
(extension of the XMM-BCS field)

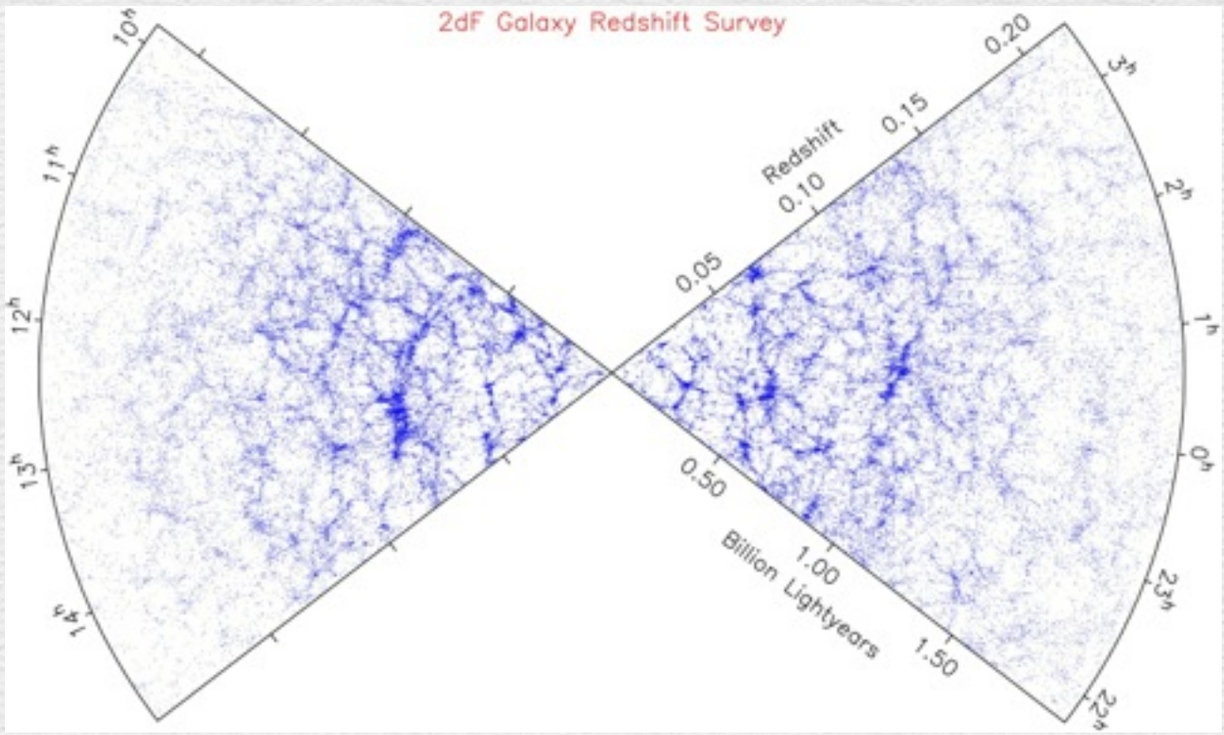


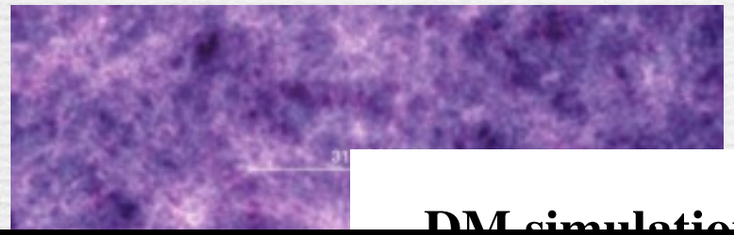
- 2011-2013: 500 yönlenme; her biri 10 ks
- Duyarlılık (nokta kaynaklar): 5x10
  (0.5 - 2 keV)

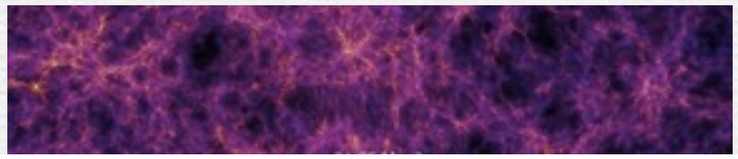

"Primordial perturbations"


Cluster
Group
Void
Density
ρ_{crit}
"failed galaxies"
Space dimension

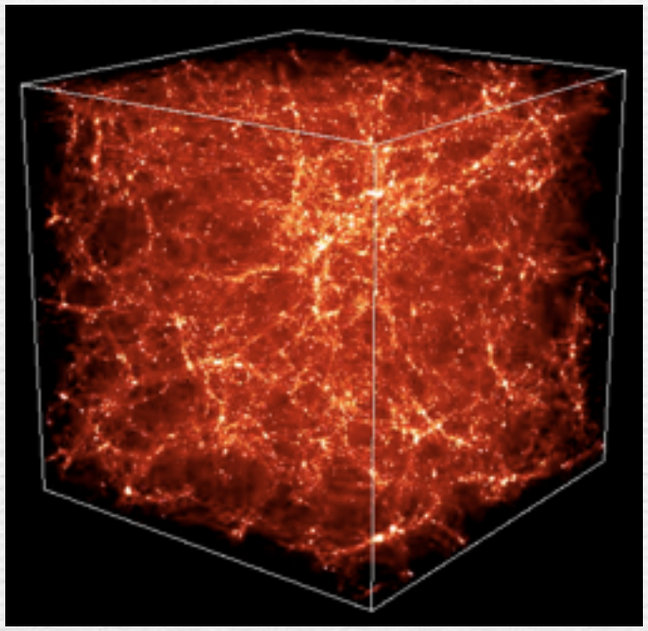

14h
13h
12h
11h
10h
Voids
600 Mpc
Clusters
300 Mpc
Filaments
2dF Redshift Survey
>120,000 Galaxies


2dF Galaxy Redshift Survey
Redshift
0.05
0.10
0.15
0.20
0.50
1.00
1.50
Billion Lightyears





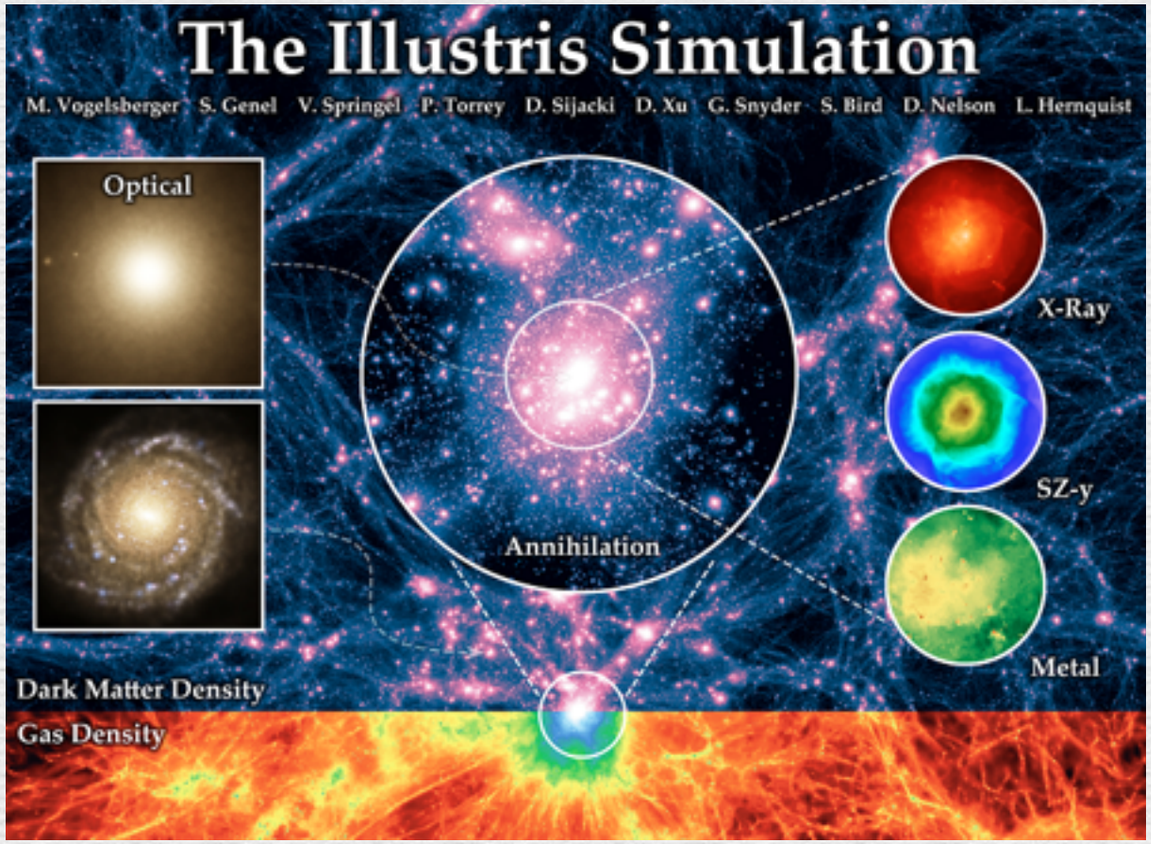
DM simulation box = 100 Mp/h ΛCDM



RAMSES

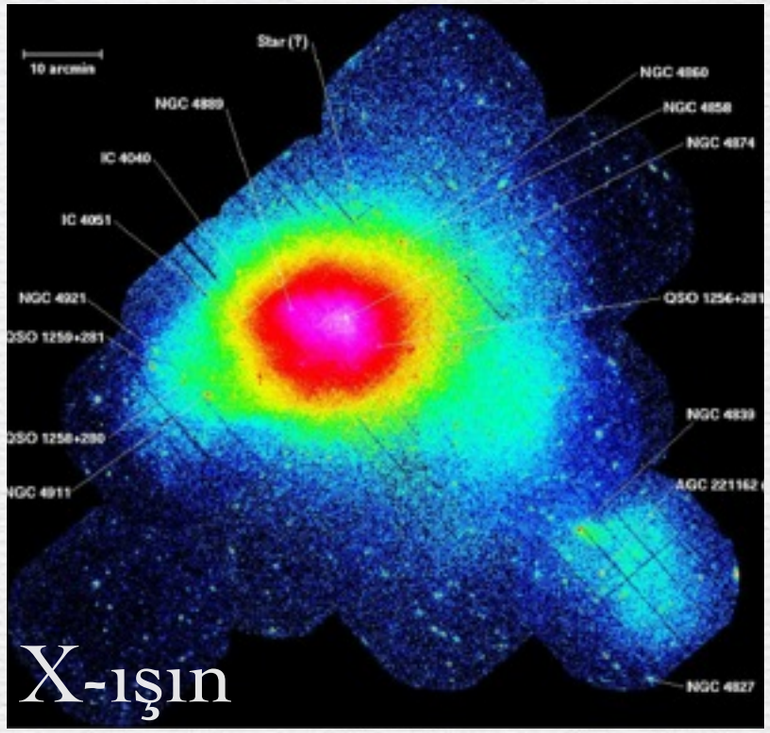
VIRG


2 June 2005 | www.nature.com/nature | £10
THE INTERNATIONAL WEEKLY JOURNAL OF SCIENCE
nature
GENOME EDITING
Rewriting the rules for gene therapy
BCL-2 INHIBITORS
Potent new antitumour compounds
HUMAN BEHAVIOUR
Oxytocin — the 'trust hormone'
SURPRISING DINOSAURS
A sauropod, by a short neck
INSIDE: UP-TO-THE-MINUTE REVIEWS ON AUTOIMMUNITY
nature insight
EVOLUTION OF THE UNIVERSE
Supercomputer simulation of the growth of 20 million galaxies

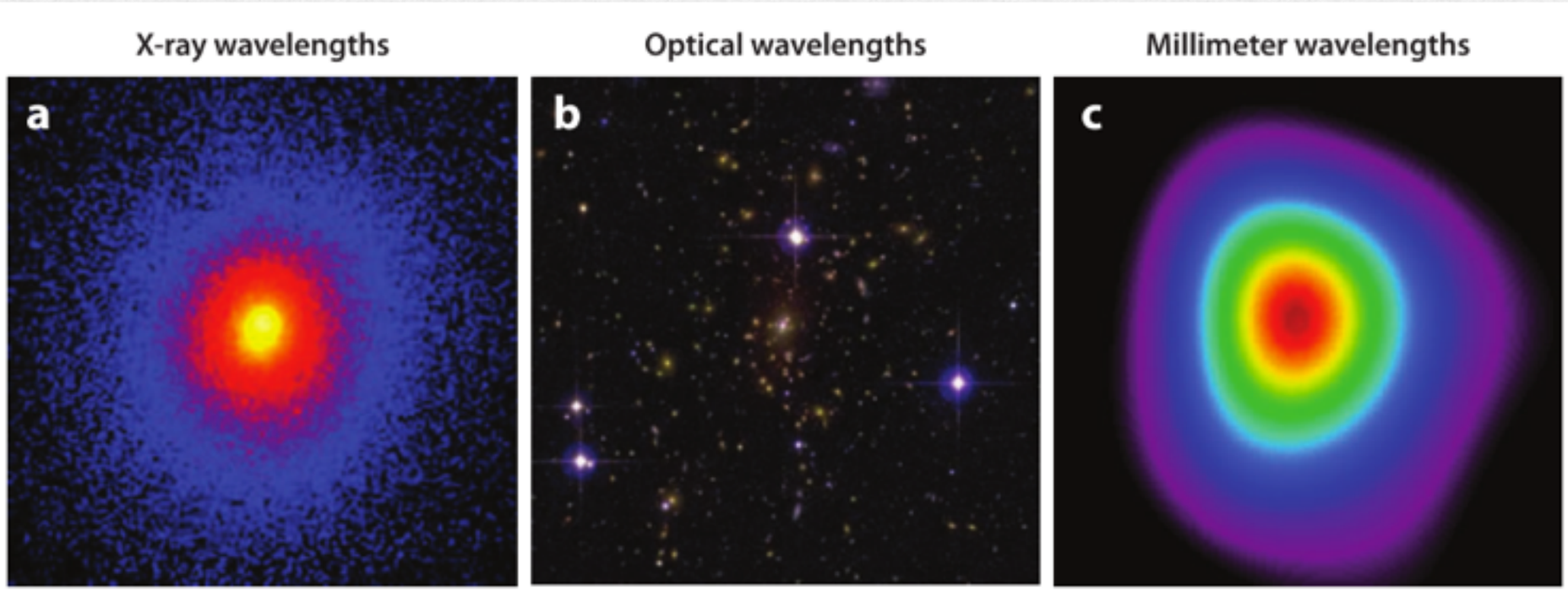

The Illustris Simulation
M. Vogelsberger S. Genel V. Springel P. Torrey D. Sijacki D. Xu G. Snyder S. Bird D. Nelson L. Hernquist
Optical
X-Ray
SZ-y
Annihilation
Metal
Dark Matter Density
Gas Density

Farklı Dalgaboylarında Galaksi Kümeleri

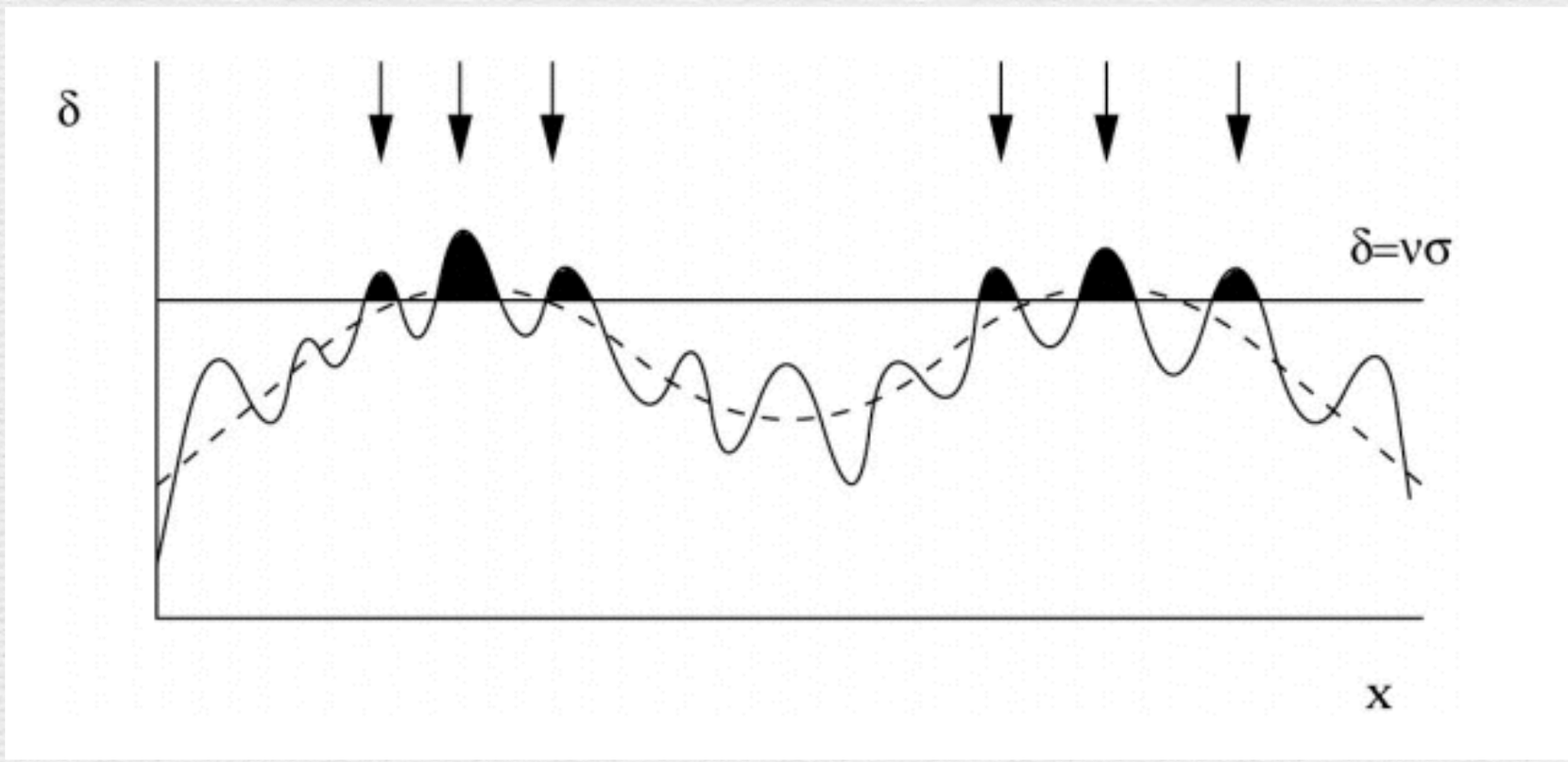
Galaksi topluluğu

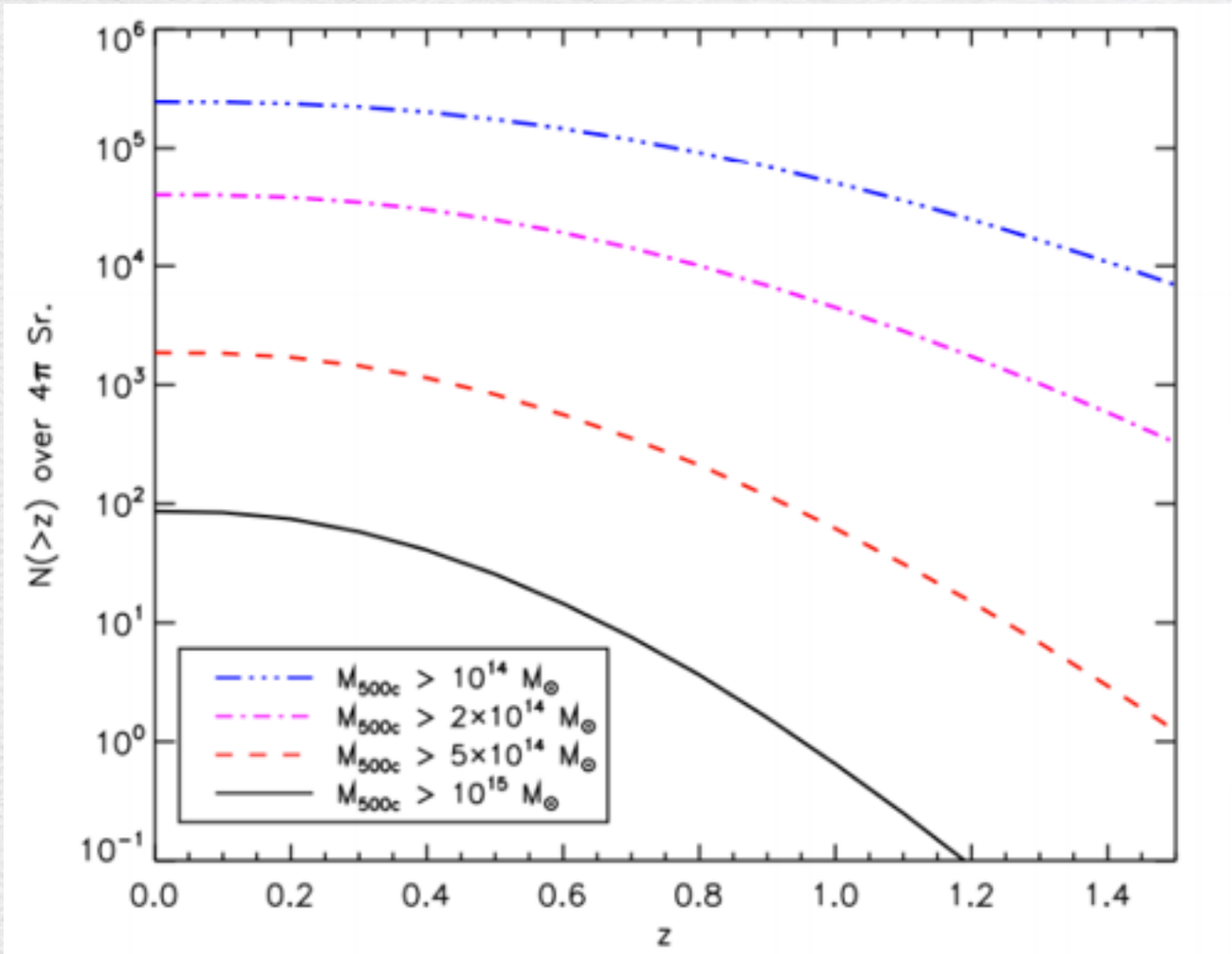


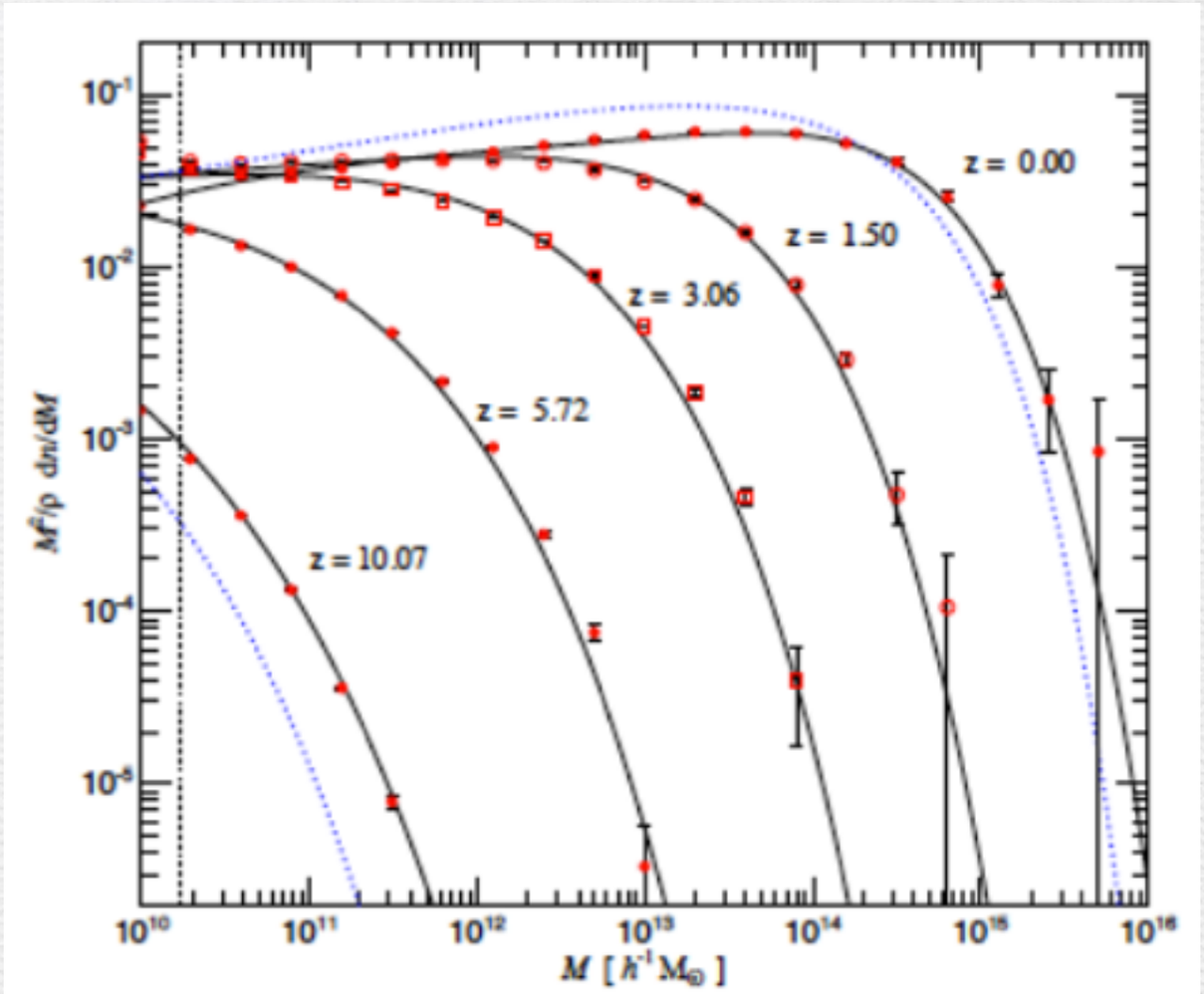
Sıcak ICM
Aktif Galaksiler



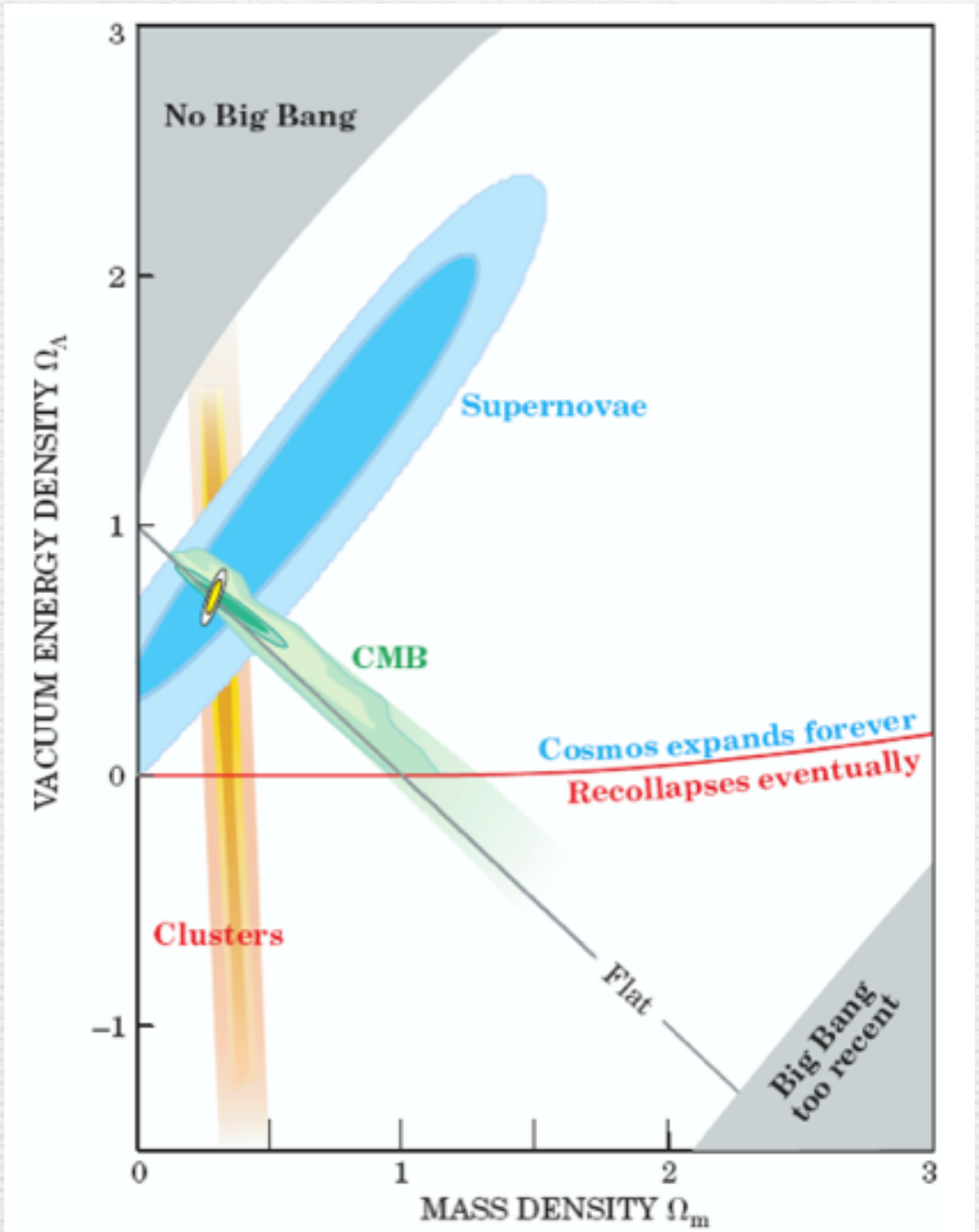
Observable $\frac{dN}{d\Omega dz} = \frac{dV}{d\Omega dz} \times \int_{M_{min}}^{\infty} dM \frac{dn}{dM}$ Theory

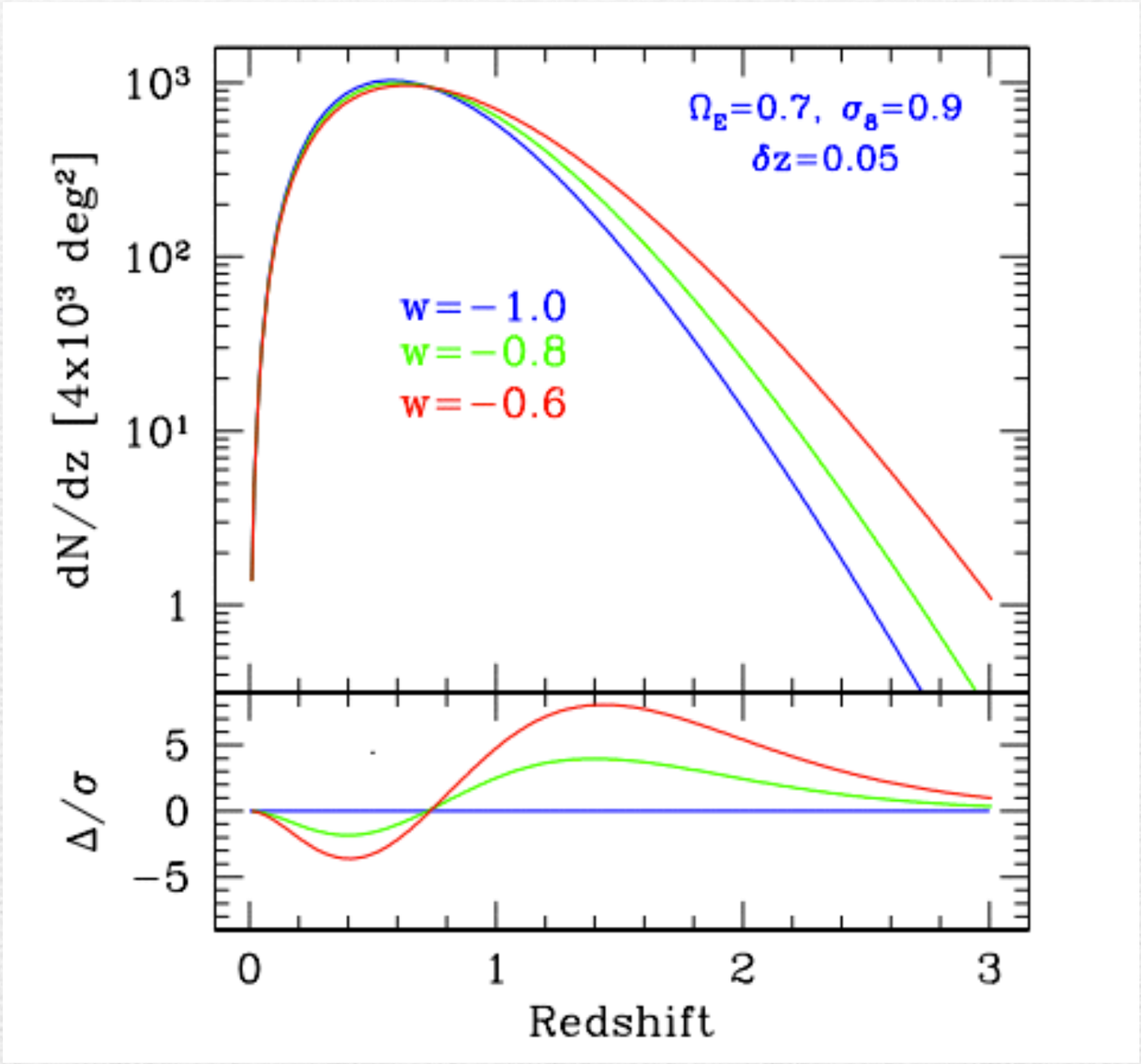




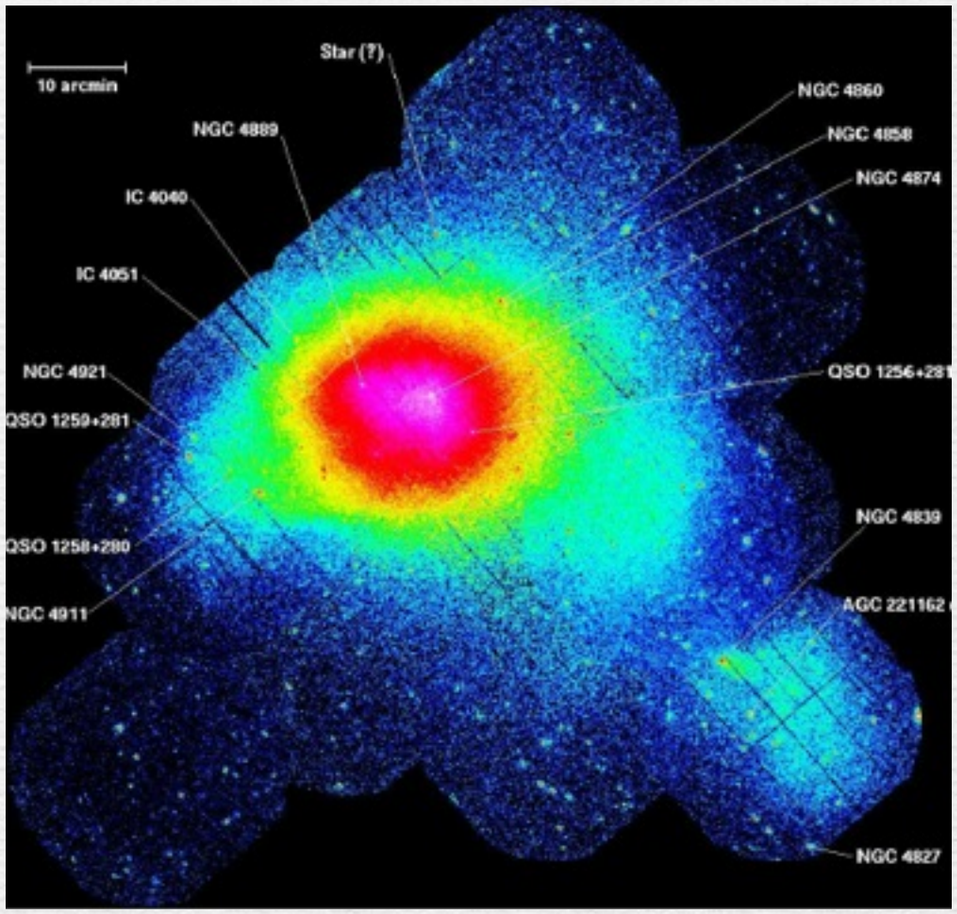


Low-z	Mid-z	High-z	« Desert »	Lyman-break proto clusters
z < 0.5	0.5 < z < 0.8	0.8 < z < 1.5	1.5 < z < 2.2	2.2 < z
> 10.000	1000's	10's	1's	10's


No Big Bang
Supernovae
CMB
Cosmos expands forever
Recollapses eventually
Clusters
Flat
Big Bang too recent
VACUUM ENERGY DENSITY Ω_Λ
MASS DENSITY Ω_m
3
2
1
0
−1
0
1
2
3


Ω_Σ=0.7, σ_8=0.9
δz=0.05
w=−1.0
w=−0.8
w=−0.6
dN/dz [4x10³ deg²]
Δ/σ
Redshift
10³
10²
10¹
1
5
0
−5
0
1
2
3

Optik mi? X-ışınları mı?



XXL Takip (Follow-up) Programları

Optik:

Radyo:

Tayfsal Tarama:

XXL Takip (Follow-up) Programları

NTT/EFOSC2 (z < 0.5)
VLT/FORS2 (0.5 < z)

LP: 191.A-0268 - 089.A-0666 - 60.A-9302

Küme üyesi galaksilerin tayfları

XXL-II: Pacaud+2016
XXL-??: Adami+(in prep.)

AAT/AAOMega

Küme üyesi galaksilerin ve AGN'lerin tayfları

XXL-XIV: Lidman+2016
XXL-VI: Fotopoulou+2016

WHT/AF2-WYFFOS

Bazı kümelerin ve süperkümelerin tayf gözlemleri

XXL-VII: Pompei+2016
XXL-XII: Koulouridis+2016

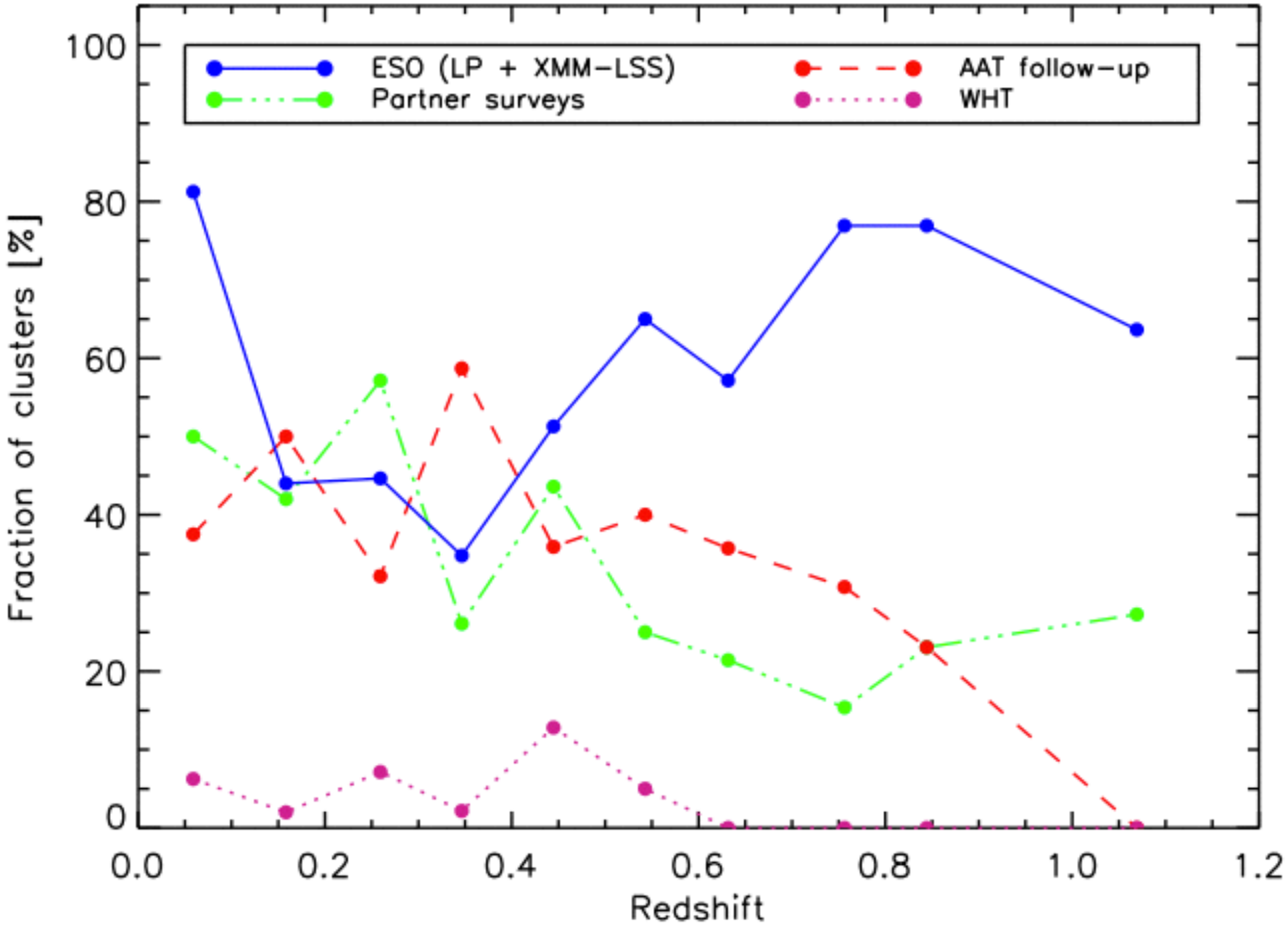
XXL Takip (Follow-up) Programları

JVLA — XXL-IX: Baran+2016

ATCA — XXL-XI: Smolcic+2016

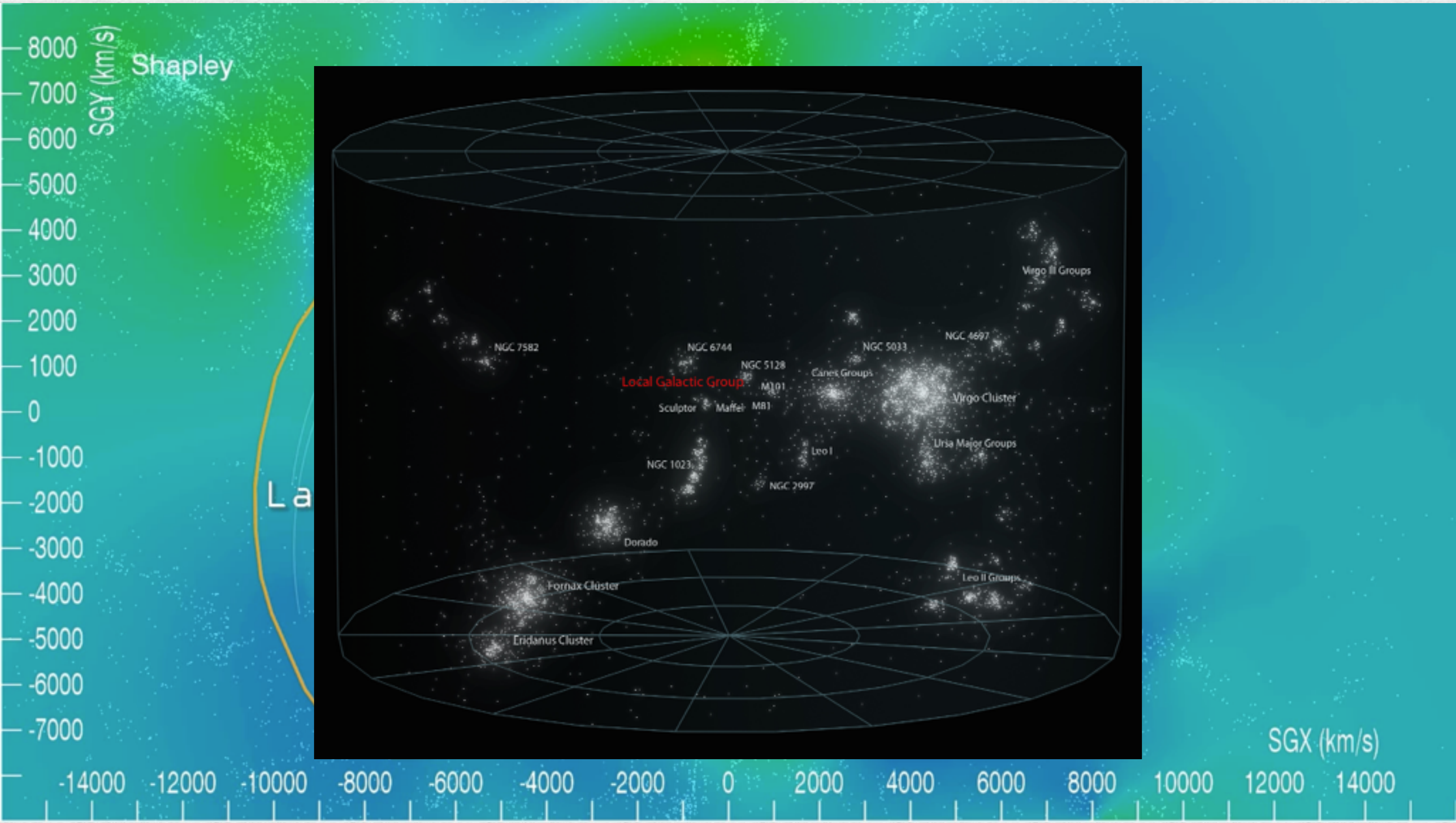
GMRT — XXL-IX: Baran+2016

XXL Kümelerinin Spektroskopik Takibi



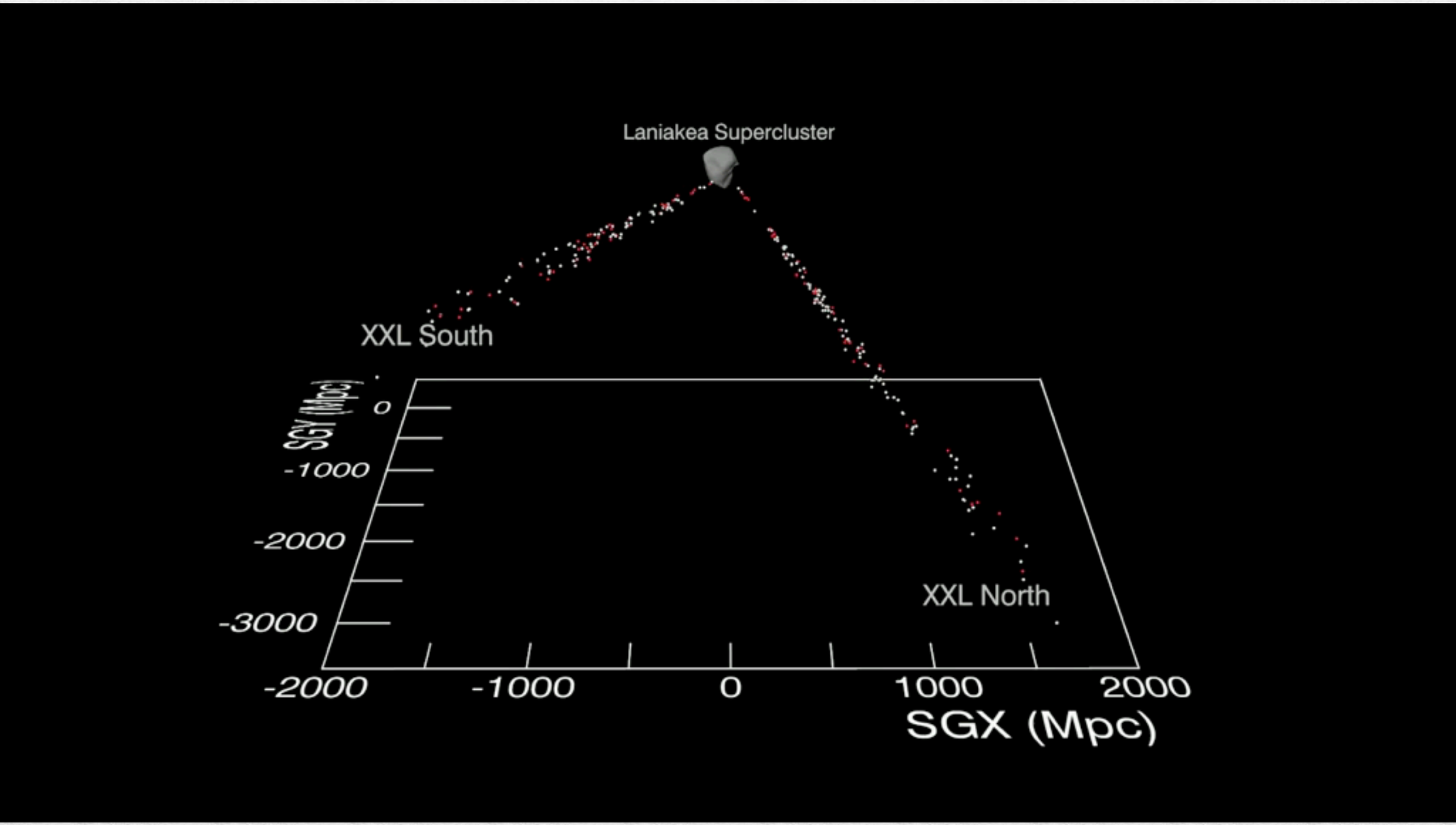
NTT-EFOSC2
VLT-VIMOS
GAMA
VIPERS
NED

Yeni Ev Adresimiz: Laniakea Süperkümesi



Tully+2014

En uzak XXL kümesi z=1.9 (XXL-V: Mantz+2014)



z=0.43'te bir süperküme

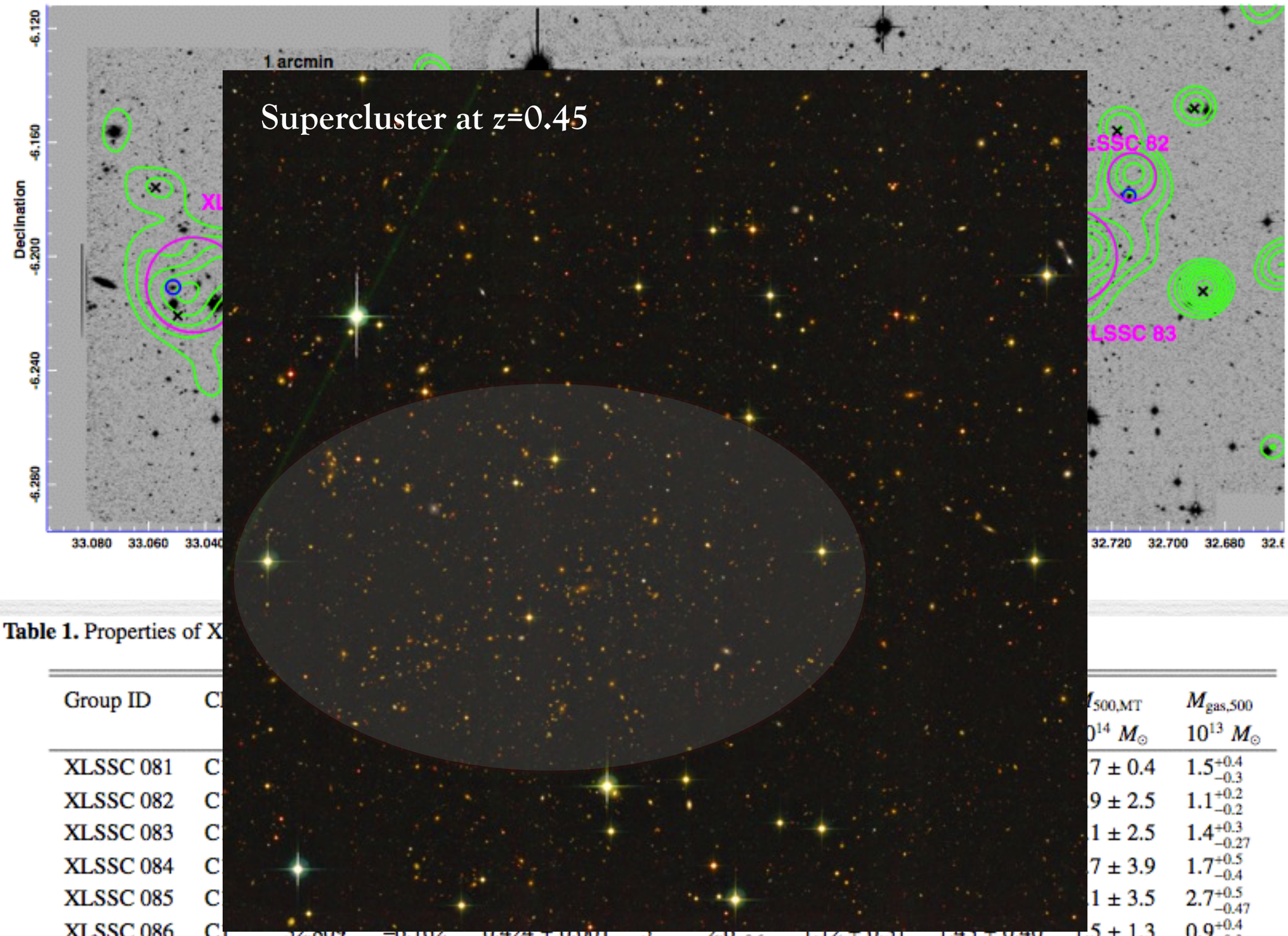
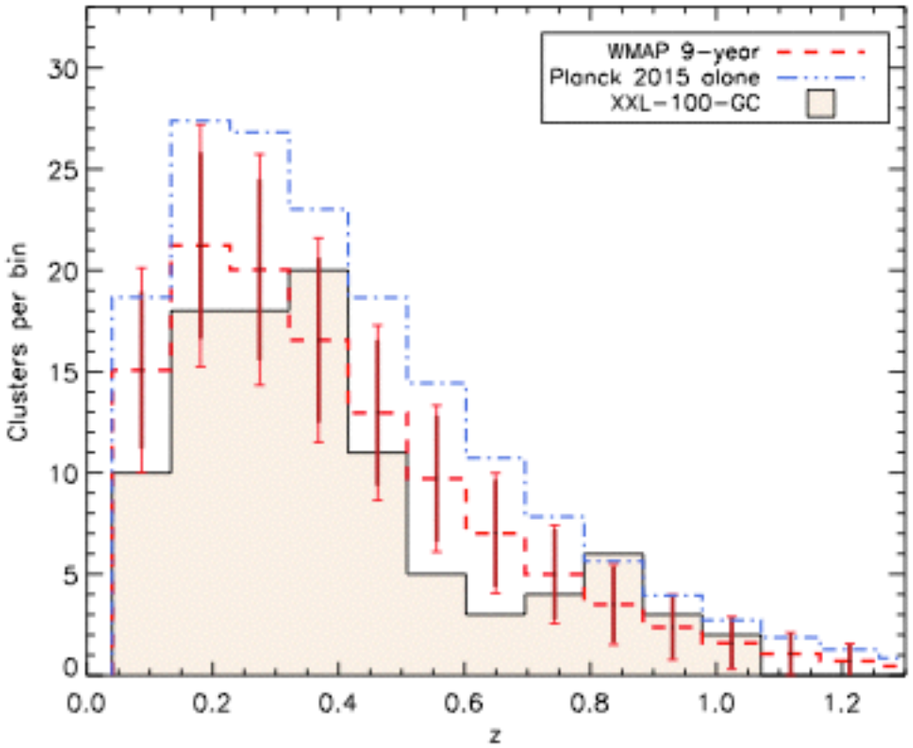
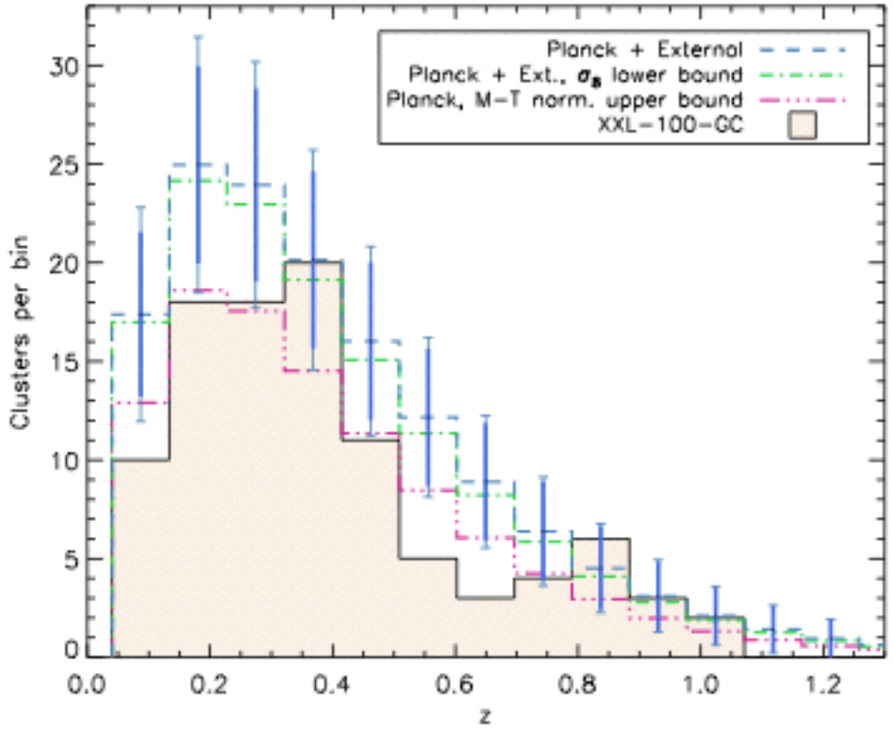


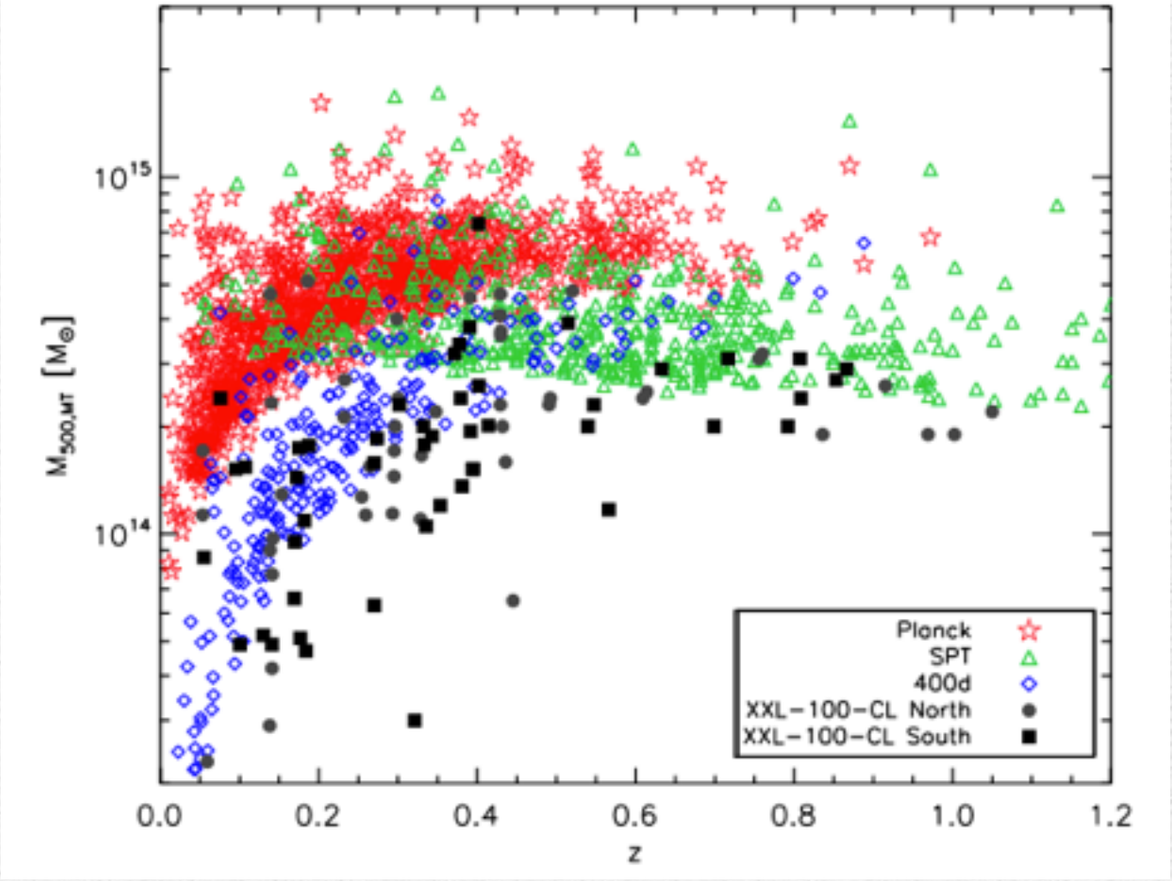
Table 1. Properties of X

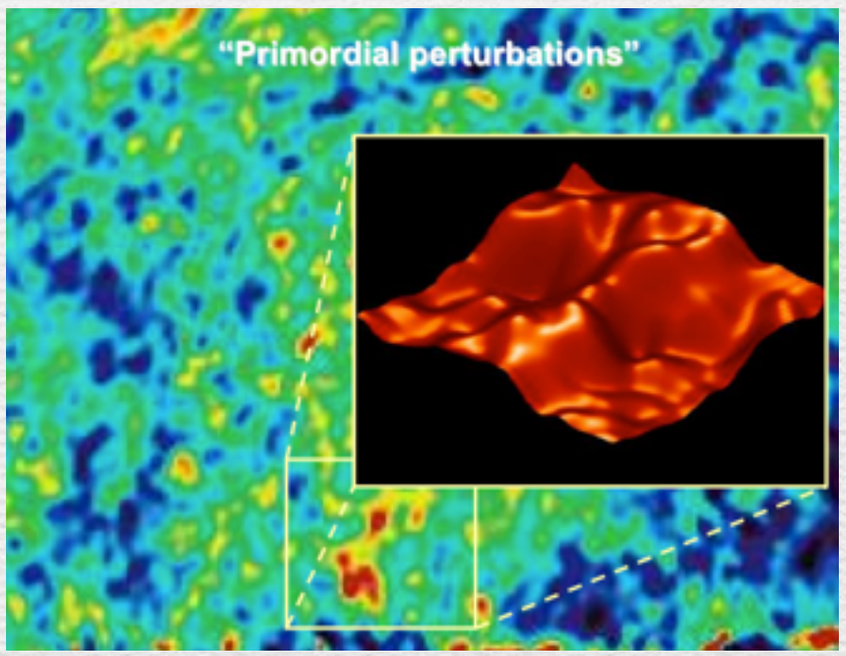
Group ID	Cl							$M_{500,MT}$	$M_{gas,500}$
								$10^{14}\ M_\odot$	$10^{13}\ M_\odot$
XLSSC 081	C1							7 ± 0.4	$1.5^{+0.4}_{-0.3}$
XLSSC 082	C1							9 ± 2.5	$1.1^{+0.2}_{-0.2}$
XLSSC 083	C1							1 ± 2.5	$1.4^{+0.3}_{-0.27}$
XLSSC 084	C1							7 ± 3.9	$1.7^{+0.5}_{-0.4}$
XLSSC 085	C1							1 ± 3.5	$2.7^{+0.5}_{-0.47}$
XLSSC 086	C1	32.869	−6.162	0.424 ± 0.001	3	$2.6_{-0.6}$	1.12 ± 0.31	1.43 ± 0.40	1.5 ± 1.3	$0.9^{+0.4}_{-0.3}$

XXL-VII: Pompei+2016


WMAP 9−year
Planck 2015 alone
XXL−100−GC
Clusters per bin
z


Planck + External
Planck + Ext., σ_8 lower bound
Planck, M−T norm. upper bound
XXL−100−GC
Clusters per bin
z


Planck
SPT
400d
XXL−100−CL North
XXL−100−CL South
$M_{500,WT}$ [$M_\odot$]
z


"Primordial perturbations"

XXL-N kümelerinin optik ve x-ışınlarında karşılaştırılması

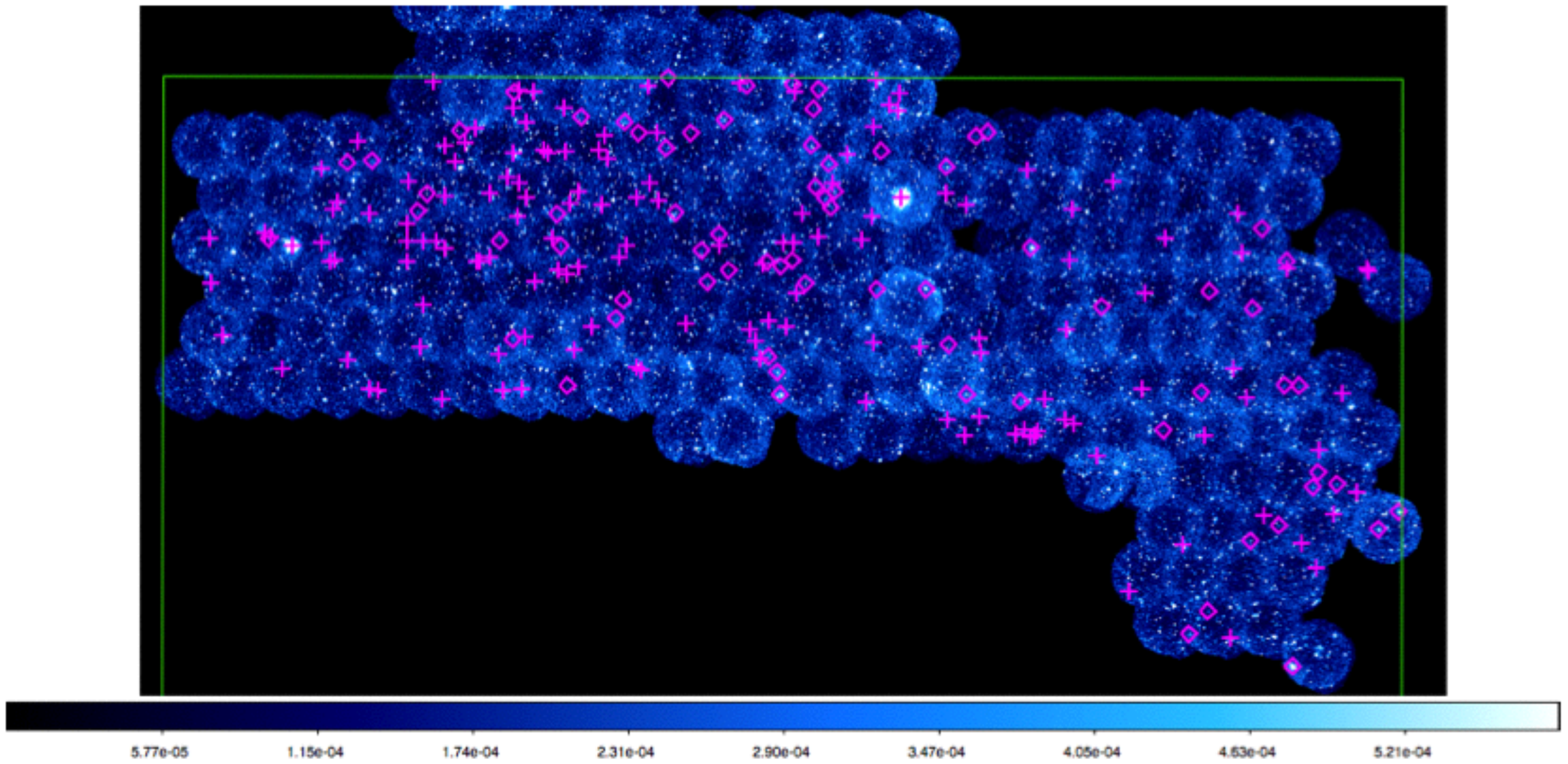
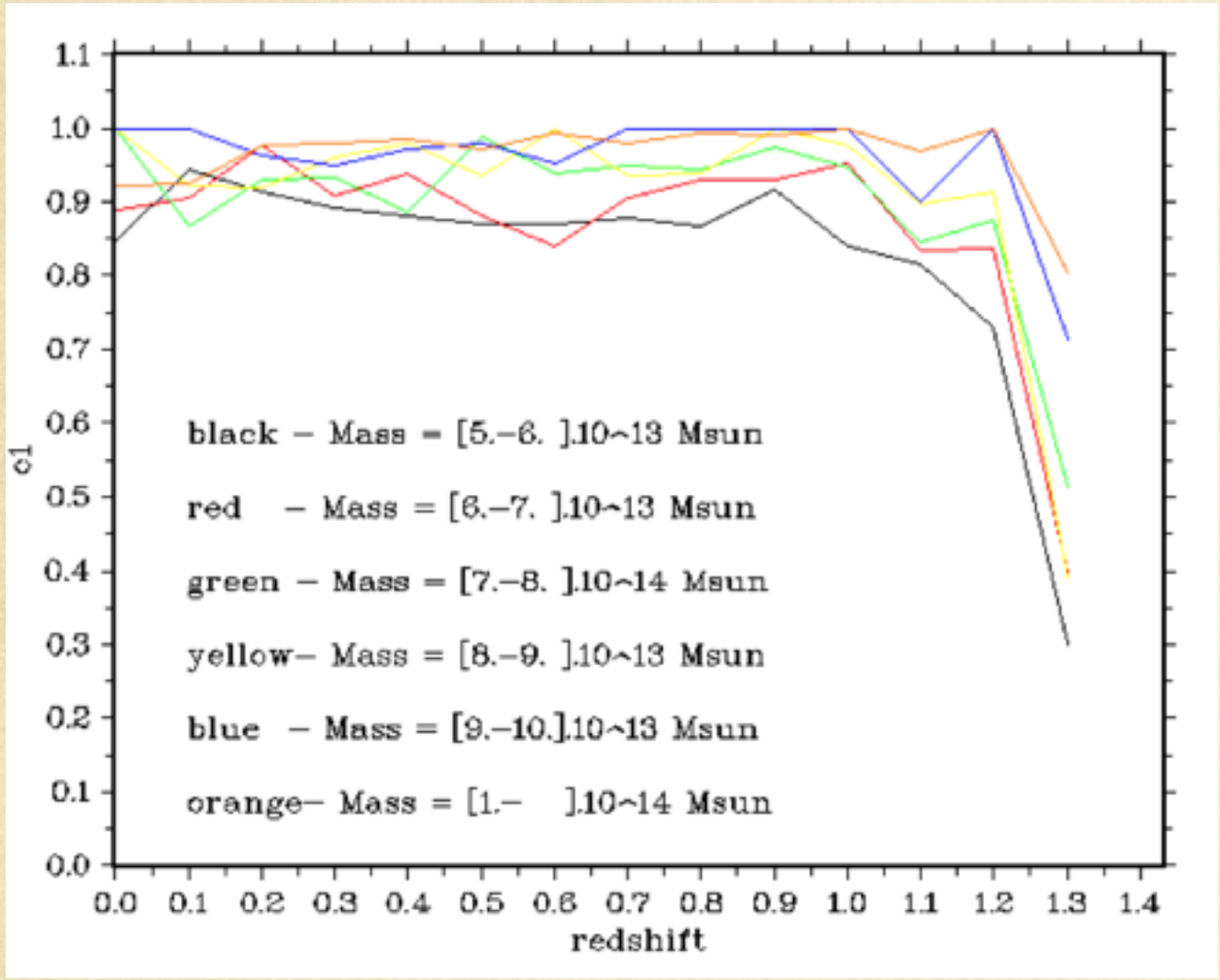
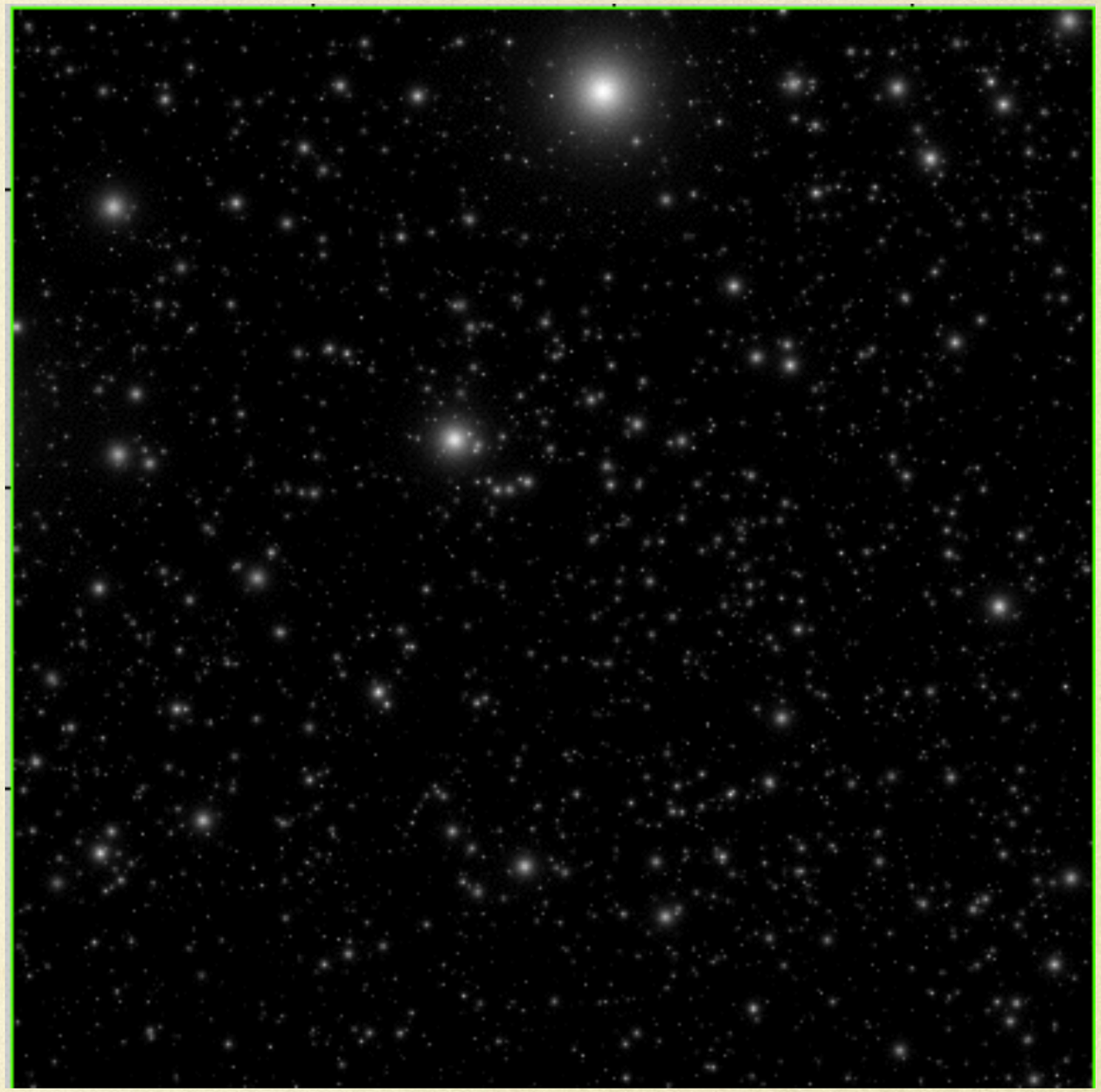


Fig. 1. Overlap between XXL-N and CFHTLS-W1 on the count-rate map. Green box represents the CFHTLS-W1. Crosses are XXL clusters with spectroscopic confirmation whereas diamonds are without spectroscopic confirmation. A total of 221 XXL clusters are shown in this map. Extension of X-ray count-rate map on the upper side is the XMM-LSS field (i.e. prior of XXL).

Simülasyon kümeleri - tamlık

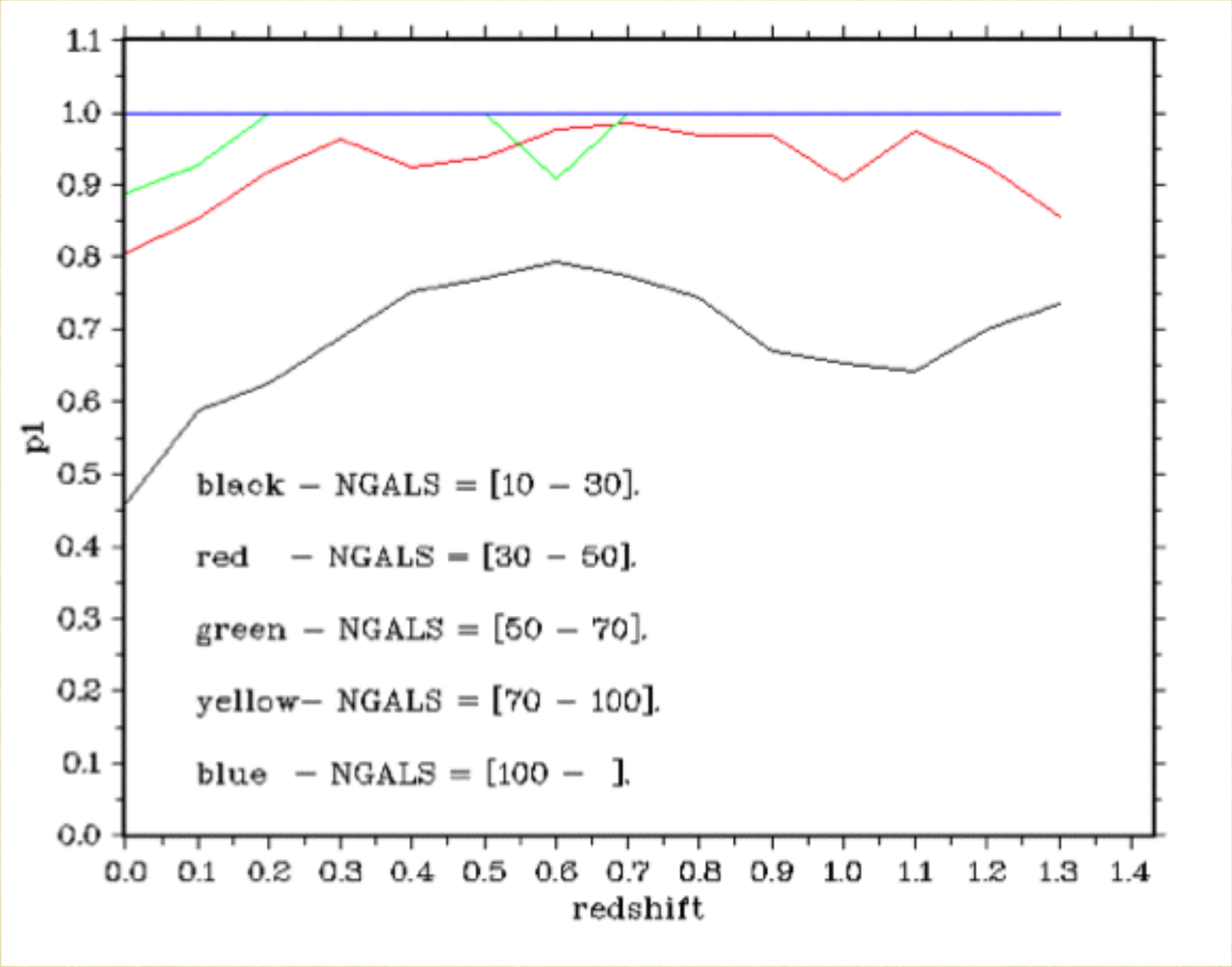




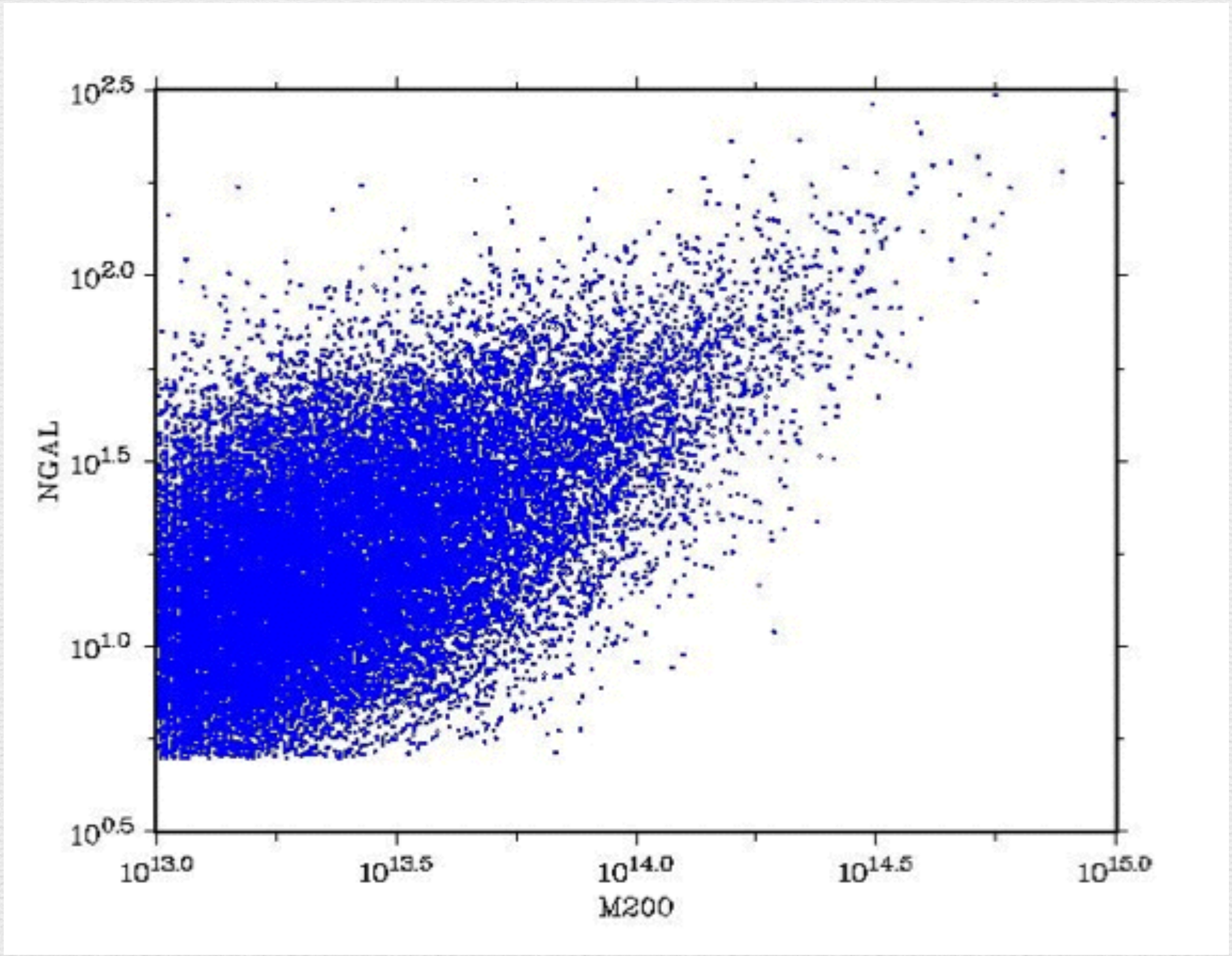
Evrard+

Uni. of Michigan Simulation Group

Simülasyon kümeleri - saflık



Kütle - zenginlik ilişkisi



CROSS-MATCHING CATALOGUES
with Physical Size

with physical size

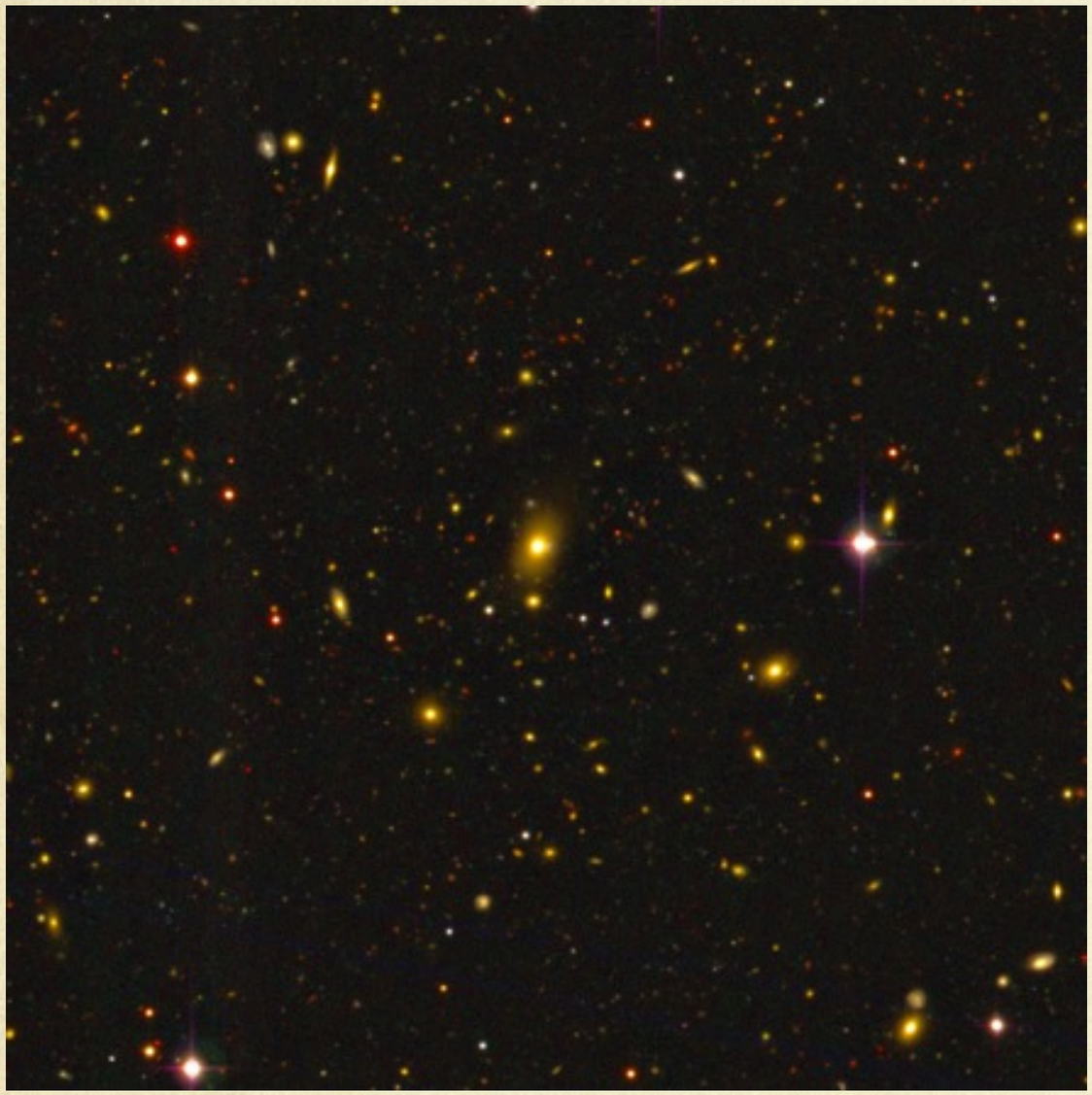
- $0.1 < z < 1.2$
- Matching radius is 1.0 Mpc
- $dz \pm (1+z) * 0.03$

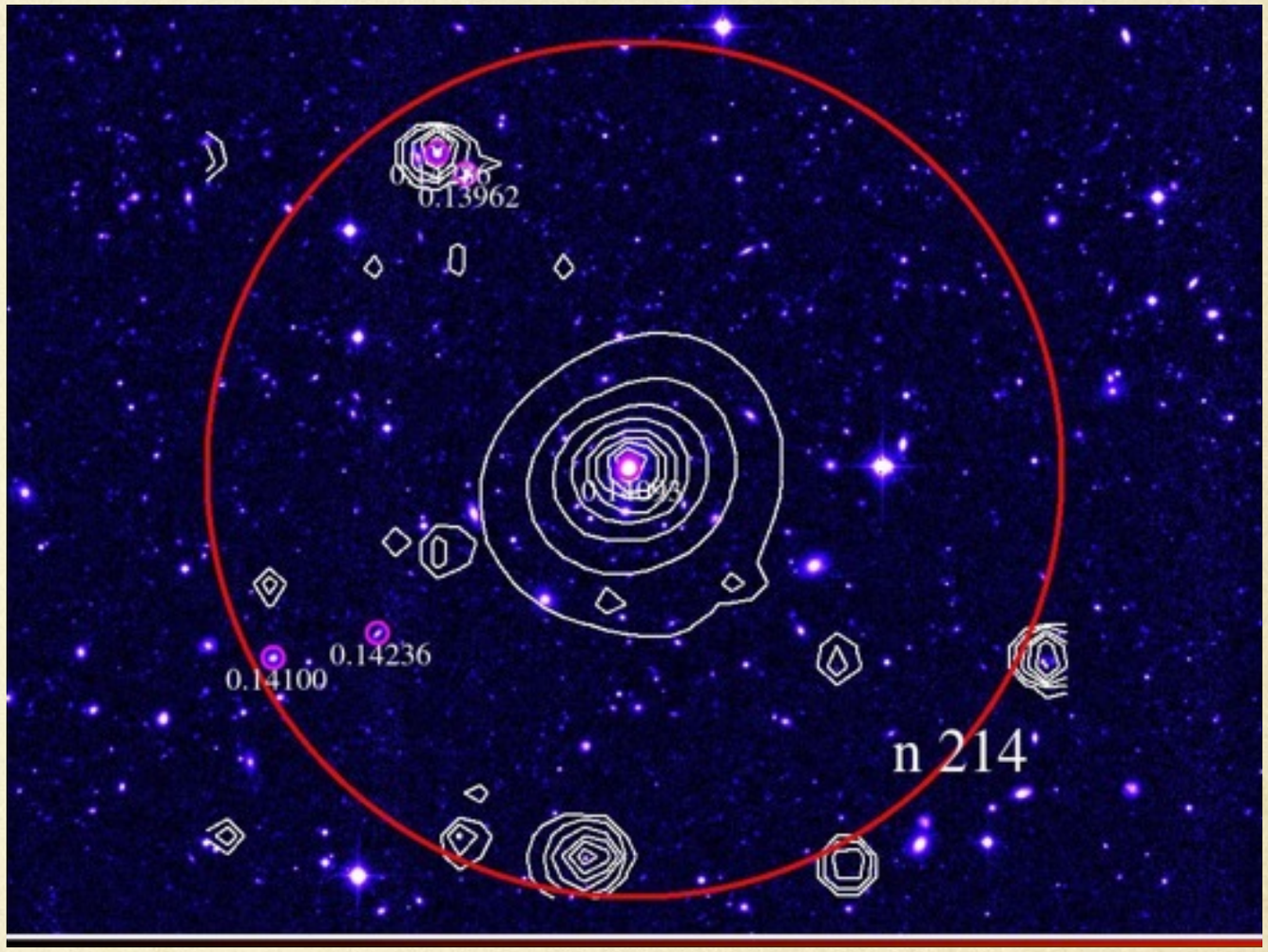
with angular size

- Matching radius is 1.0 arcminutes

X >>> Optical

Unmatched Sample



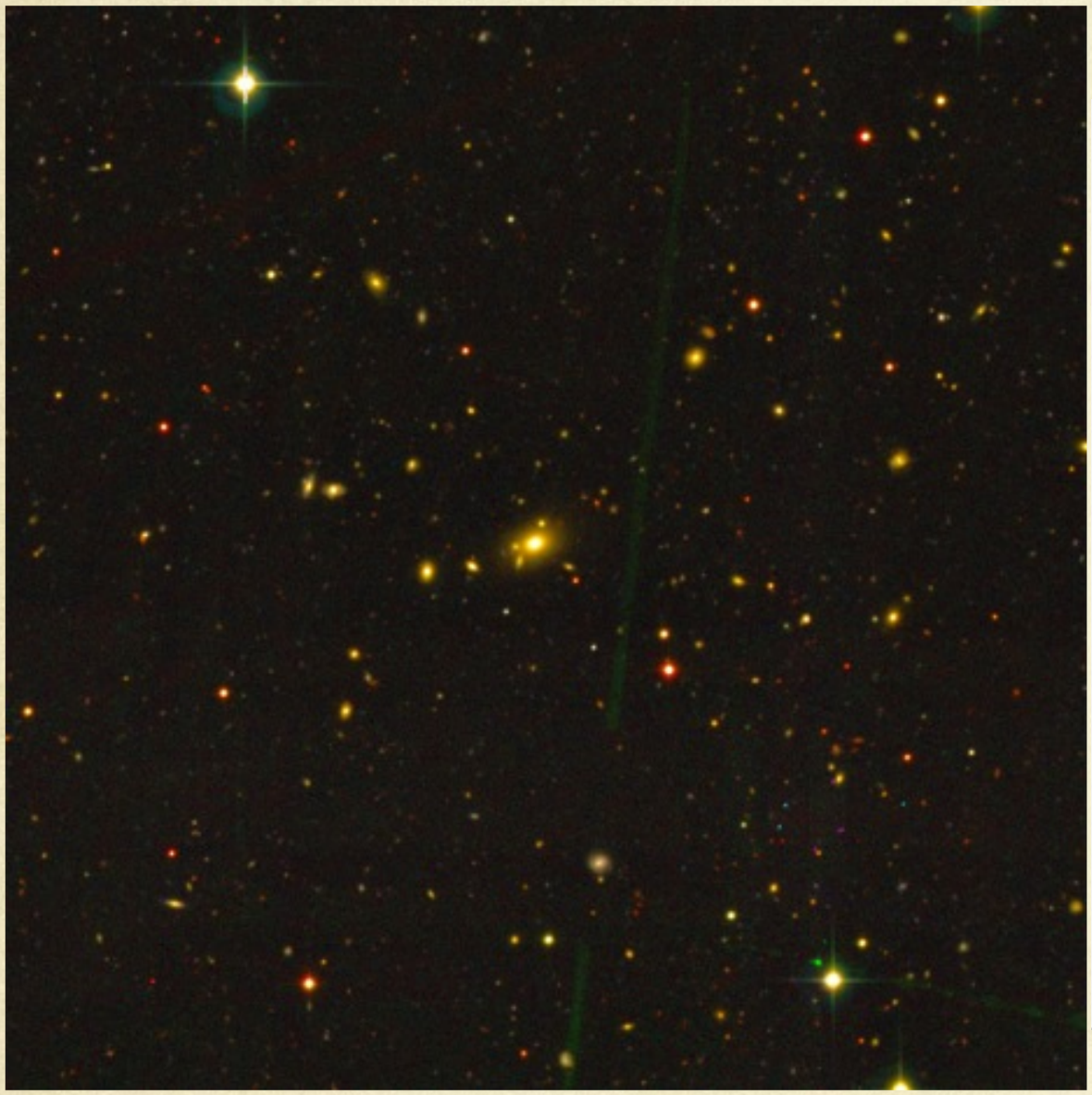


Group? and/or low-z

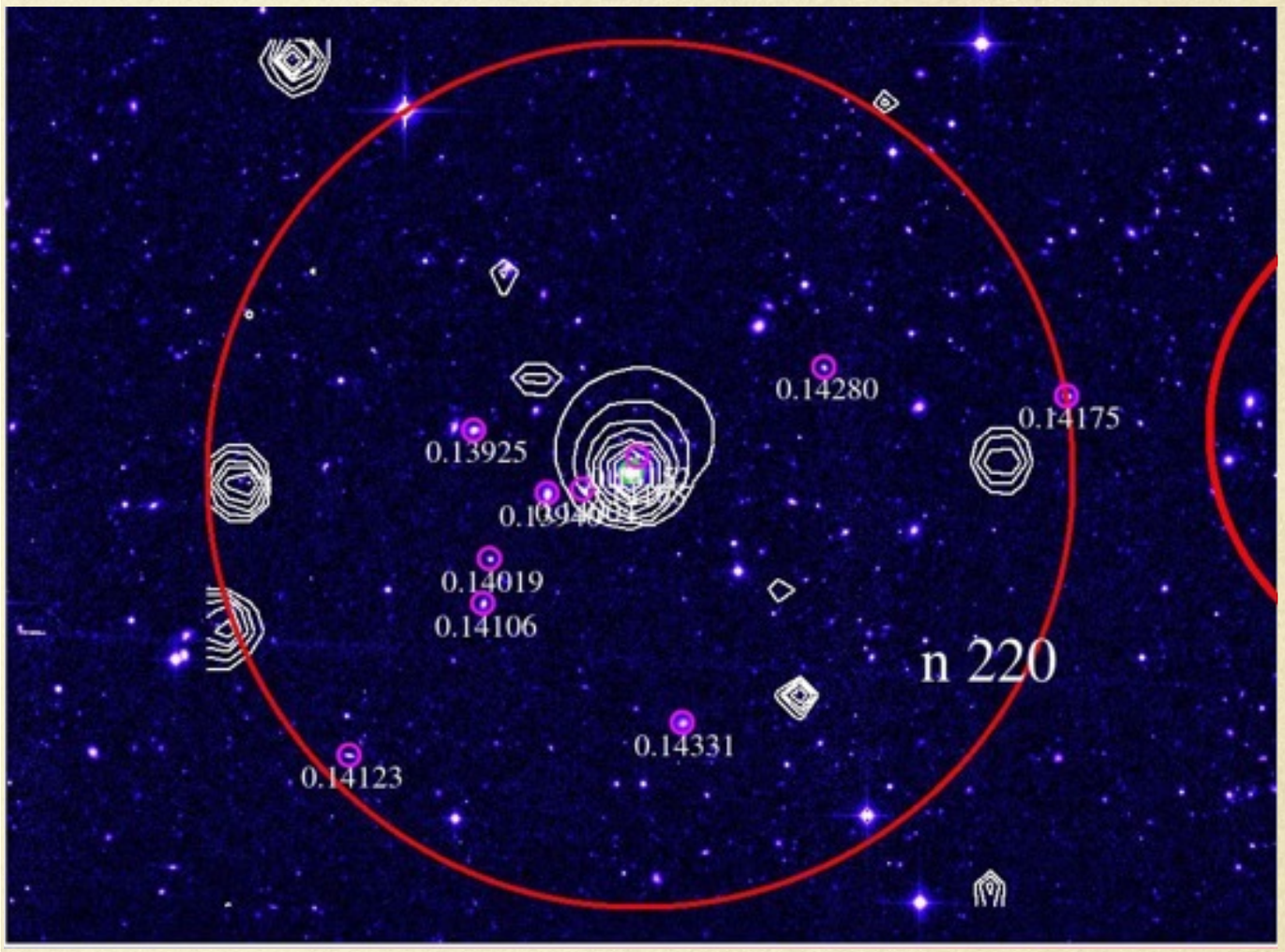
n0214 (z=0.1414)

X >>> Optical

Unmatched Sample



Group

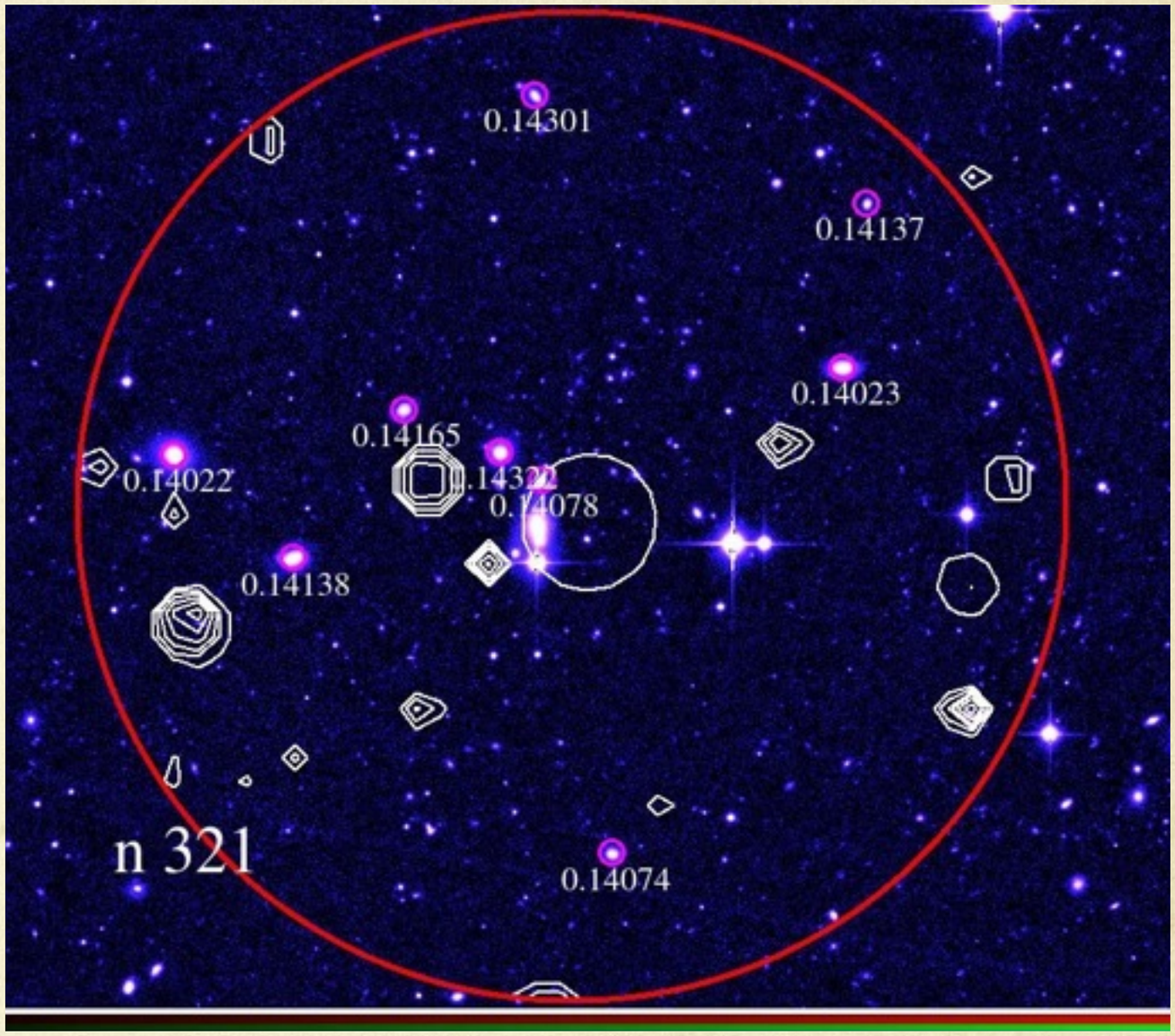


n0220 (z=0.1411)

X >>> Optical

Unmatched Sample

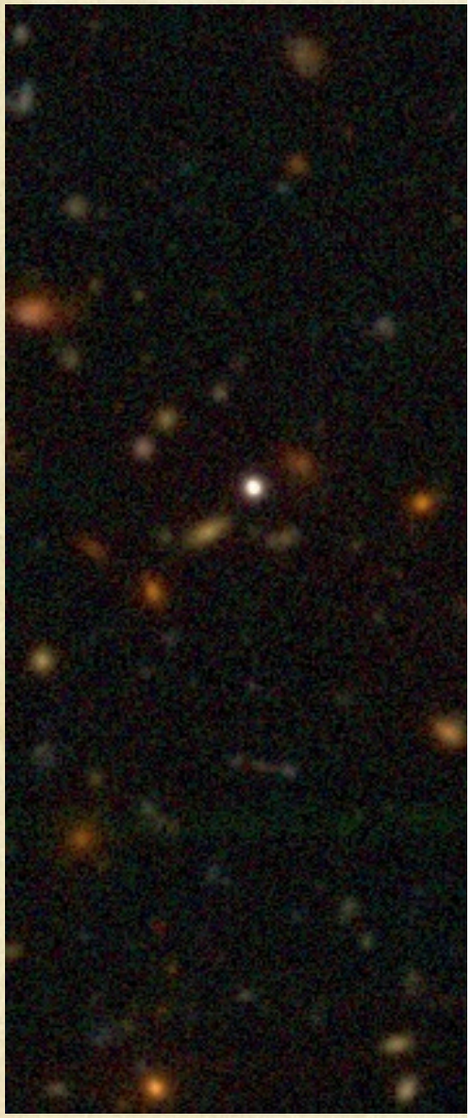
Masking

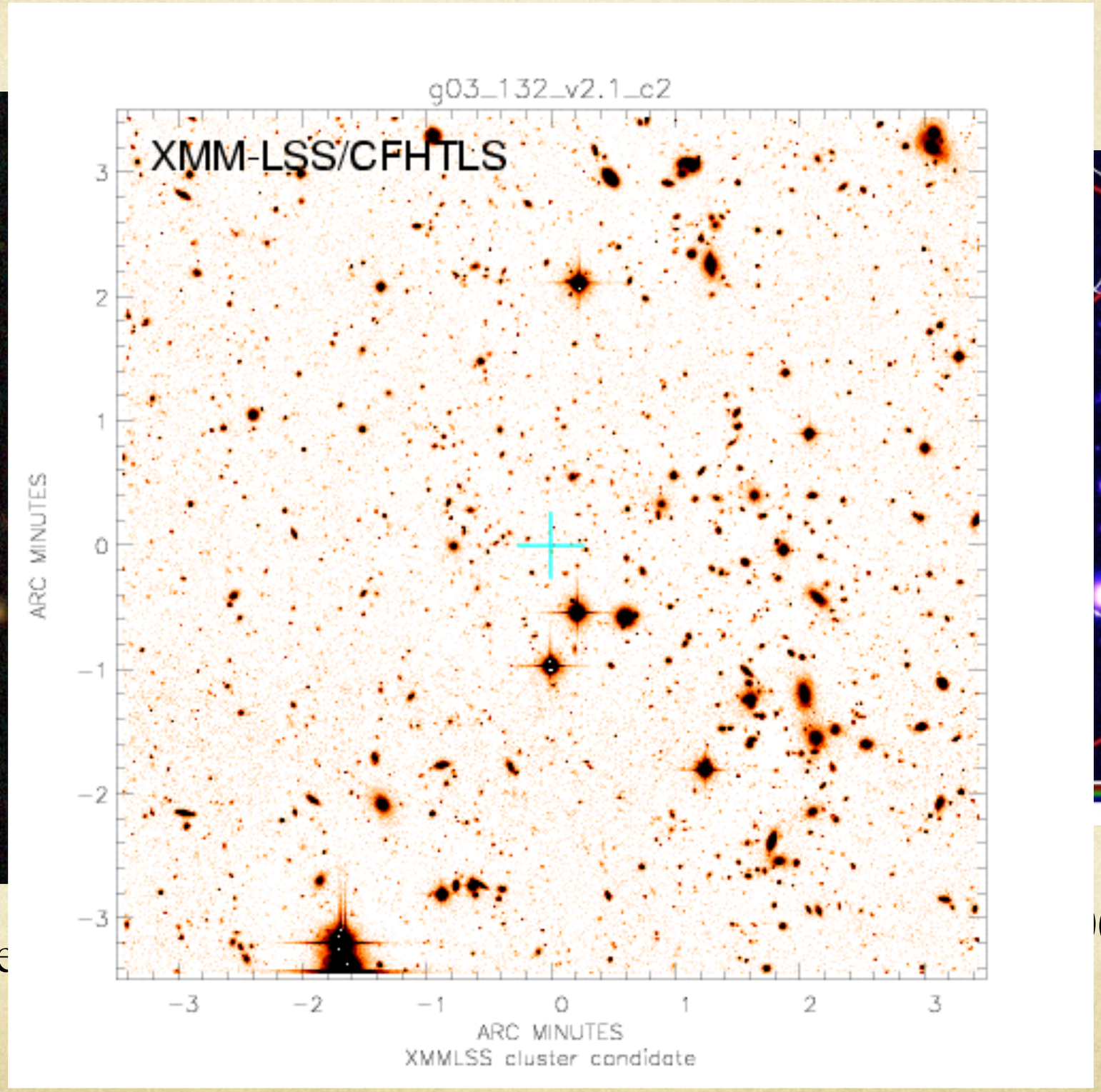


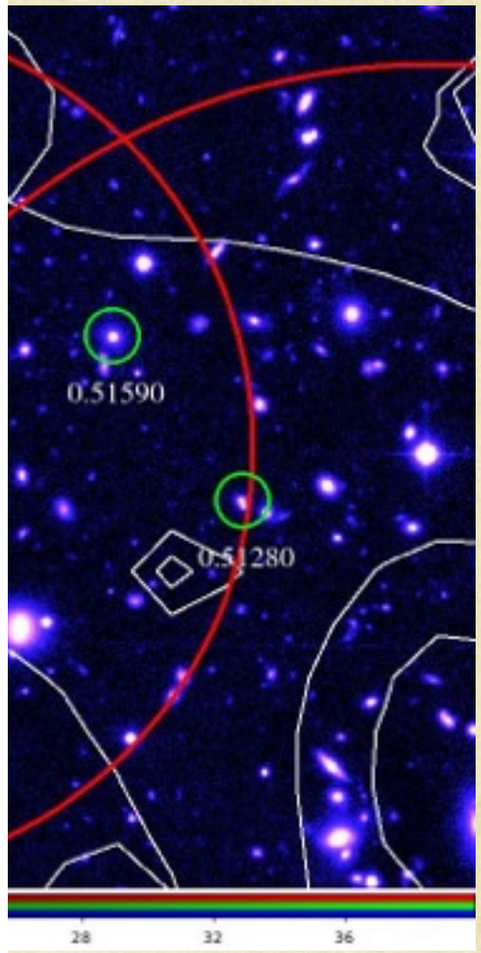
n0321 (z=0.1413)

X >>> Optical

Unmatched Sample







Nothing in the

079 (z=0.1918)

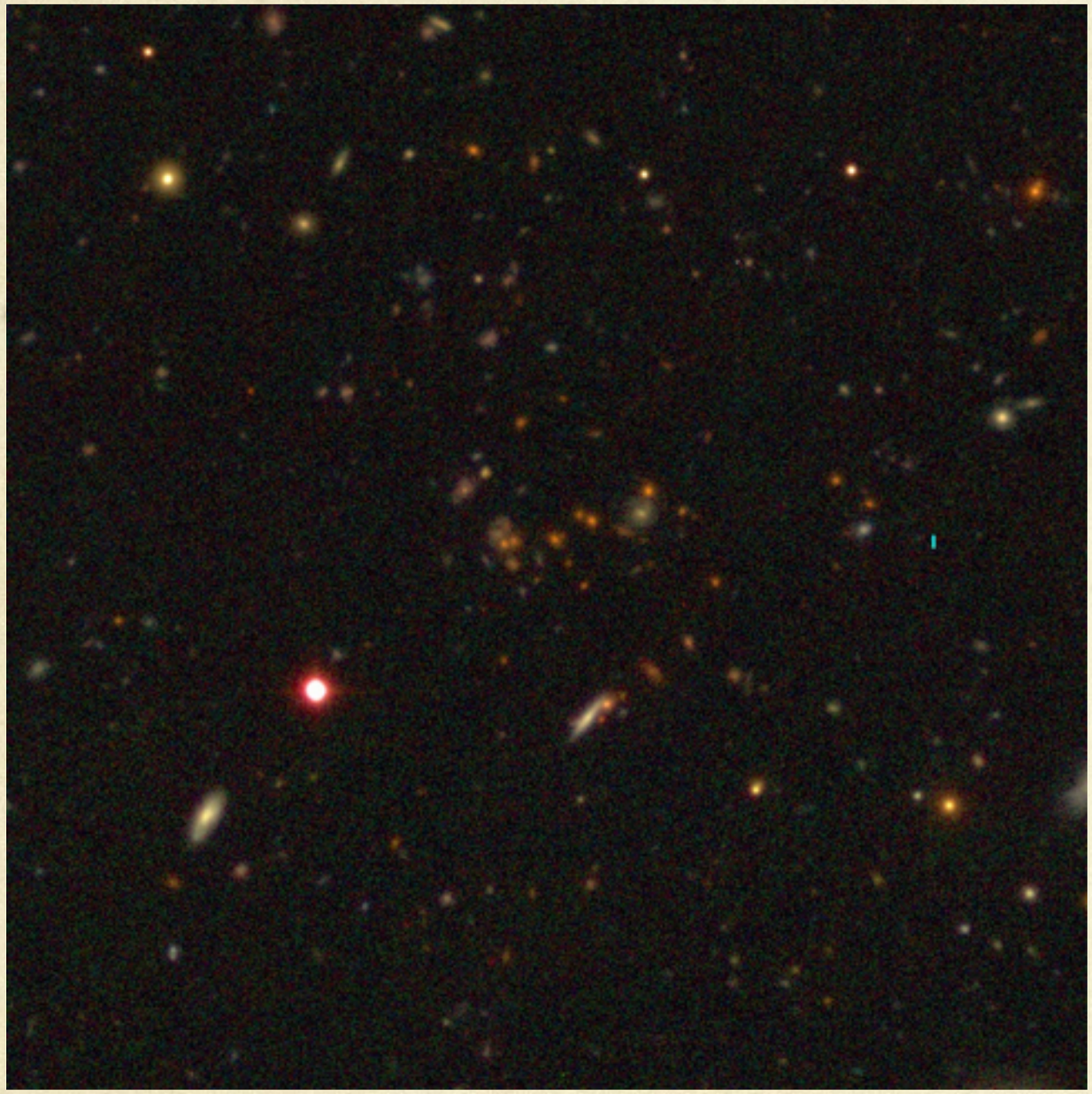
Richest Optical Clusters Without X-ray Counterpart

Richness >=30

NCL=80

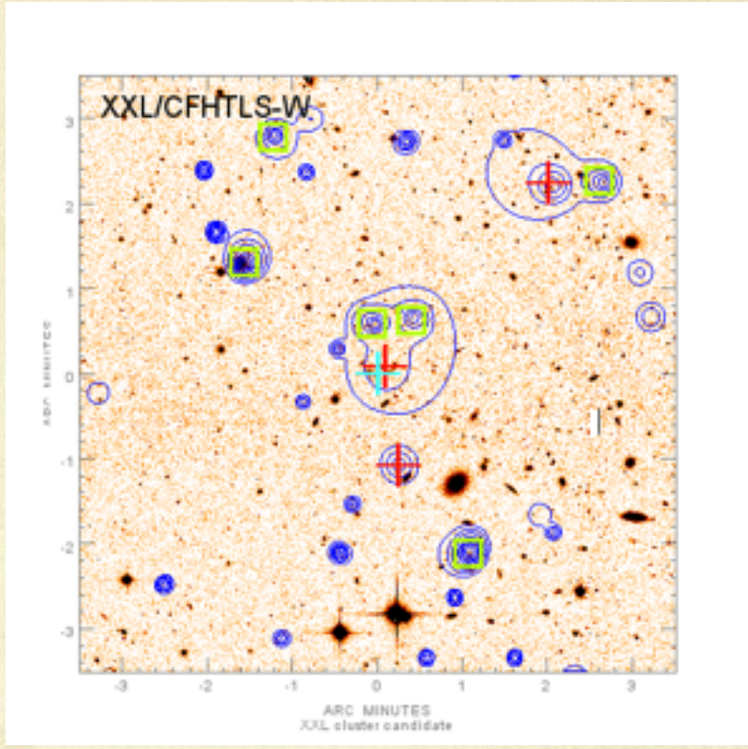
OPT >>> X

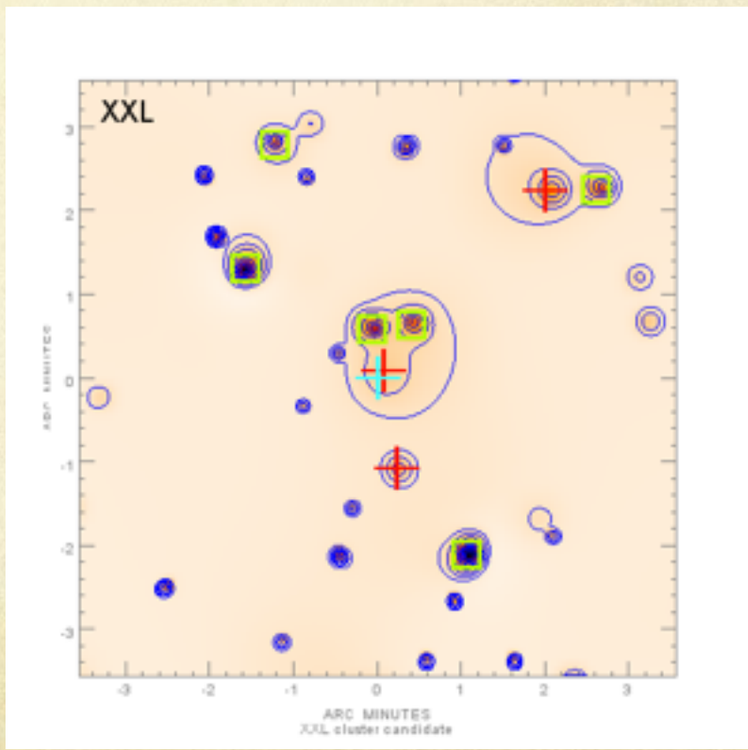
AGN Contamination



z=0.7891

off-axis=1.49





Extended case :

RA : 38.19944
DEC : -4.86760

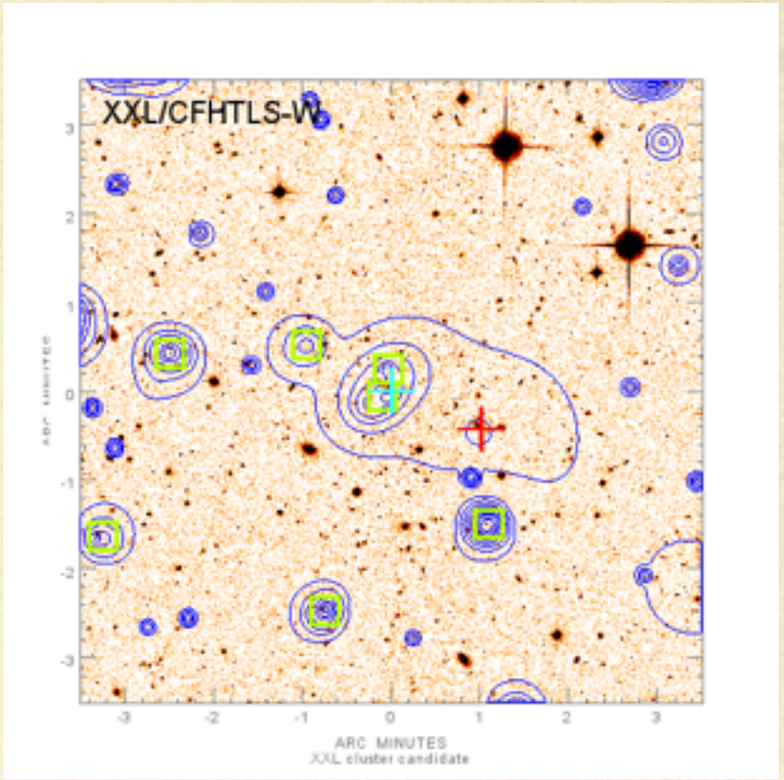
TOTAL (M1+M2+PN) :
CTS[0.5-2 Kev] : 34.42
RATE[0.5-2 Kev] : 7.30952e-03
Off-axis[arcmin] : 1.5
DetML : 14.420
ExtML : 10.875
Ext[arcsec] : 12.50

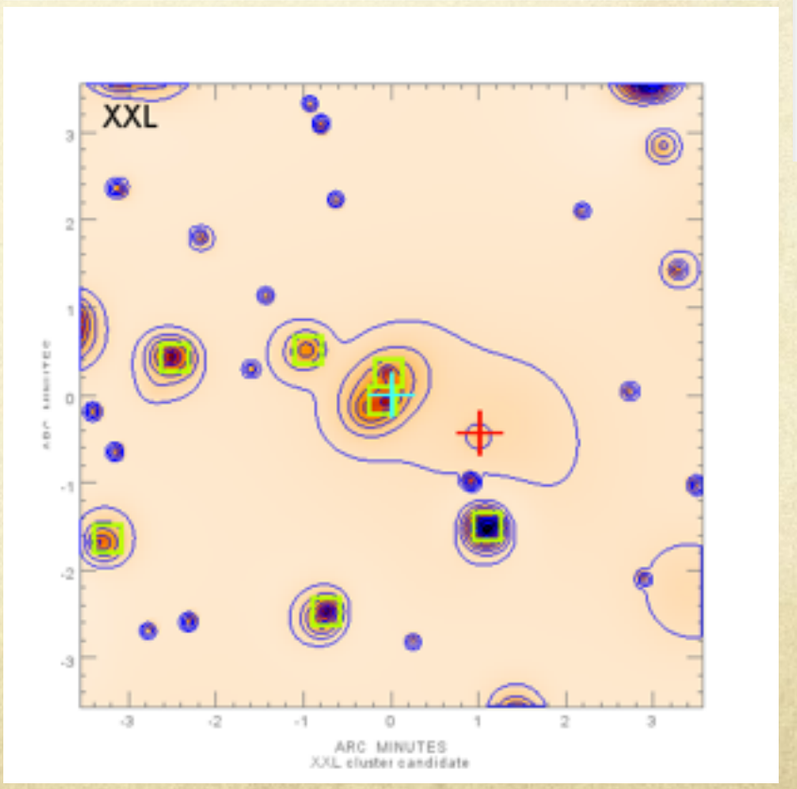
OPT >>> X

AGN Contamination

z=0.6985

off-axis=5.26





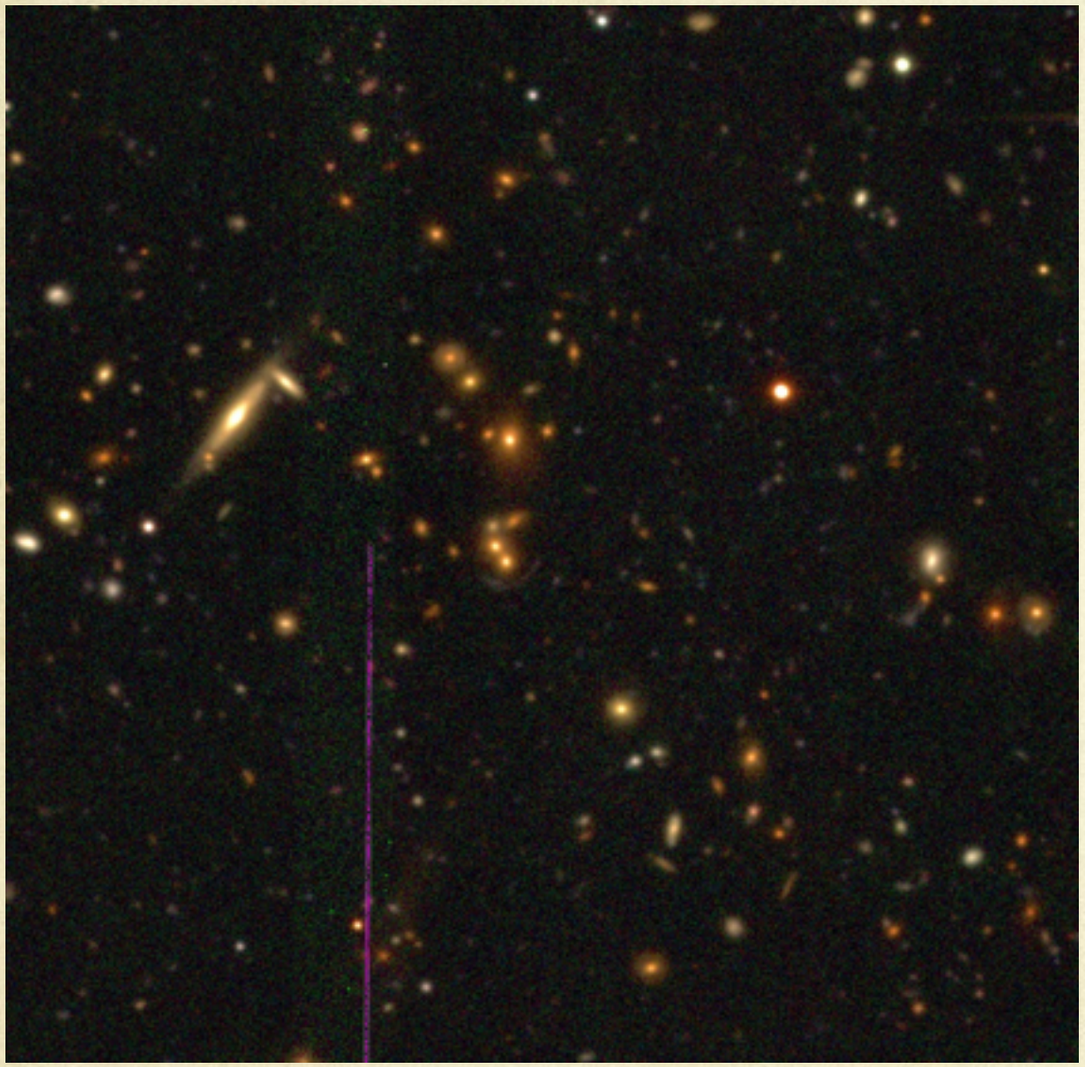
Extended case :

RA : 33.82362
DEC : -6.07557

TOTAL (M1+M2+PN) :
CTS[0.5-2 Kev] : 63.37
RATE[0.5-2 Kev] : 1.15901e-02
Off-axis[arcmin] : 5.2
DetML : 58.907
ExtML : 9.641
Ext[arcsec] : 5.48

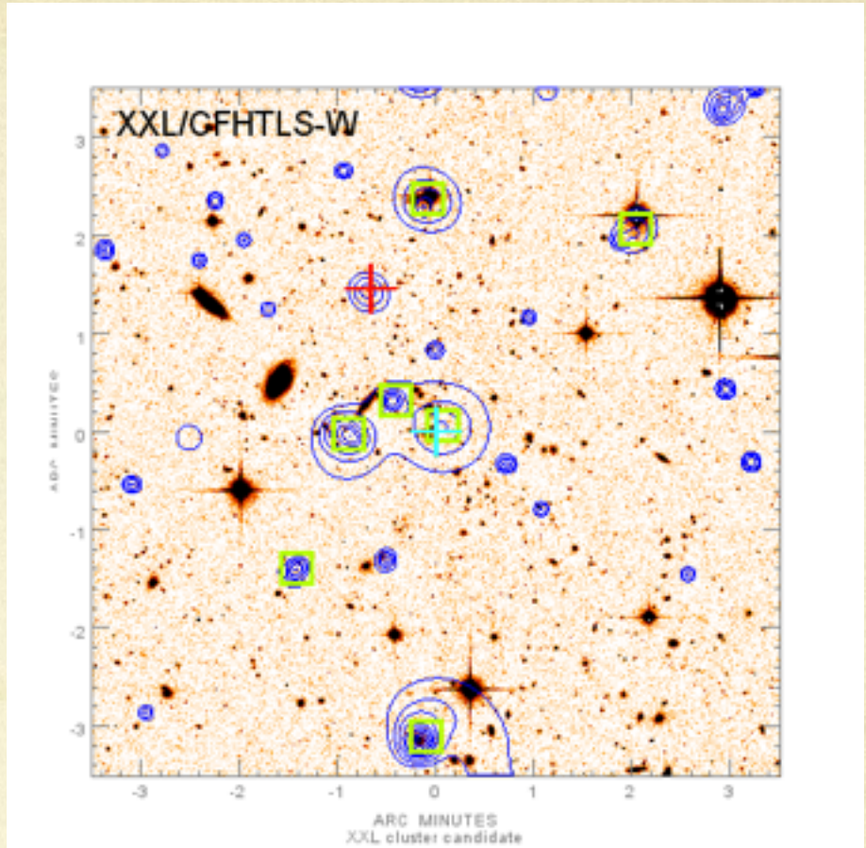
OPT >>> X

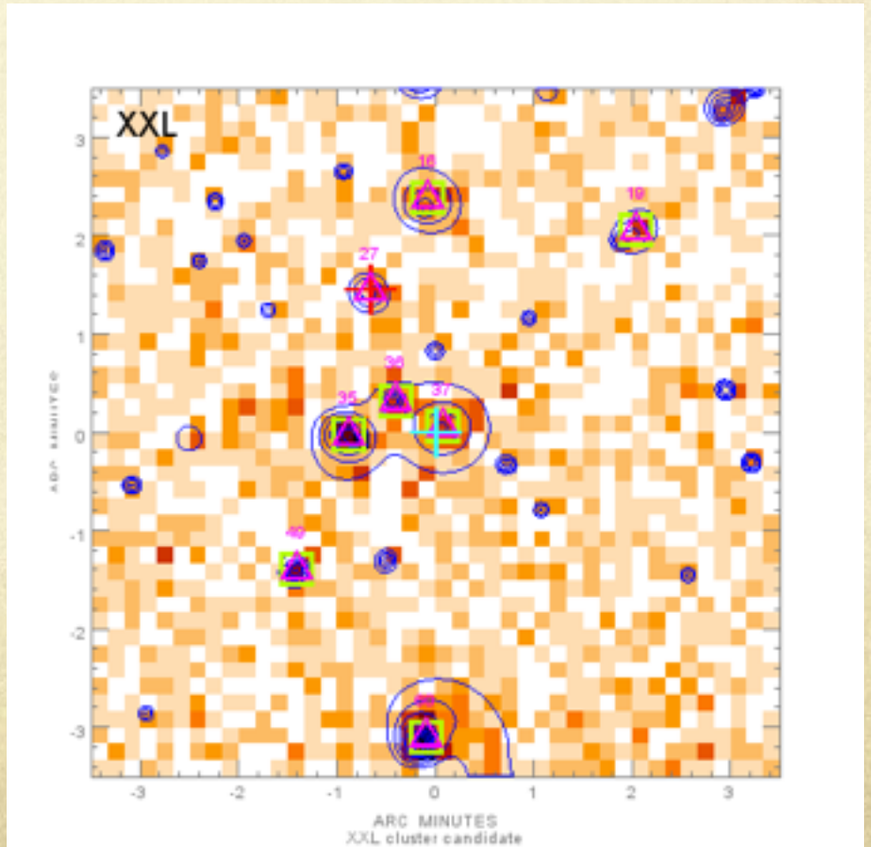
AGN Contamination



z=0.5678

off-axis=7.60





Extended case :

RA : 30.83251
DEC : -7.57900

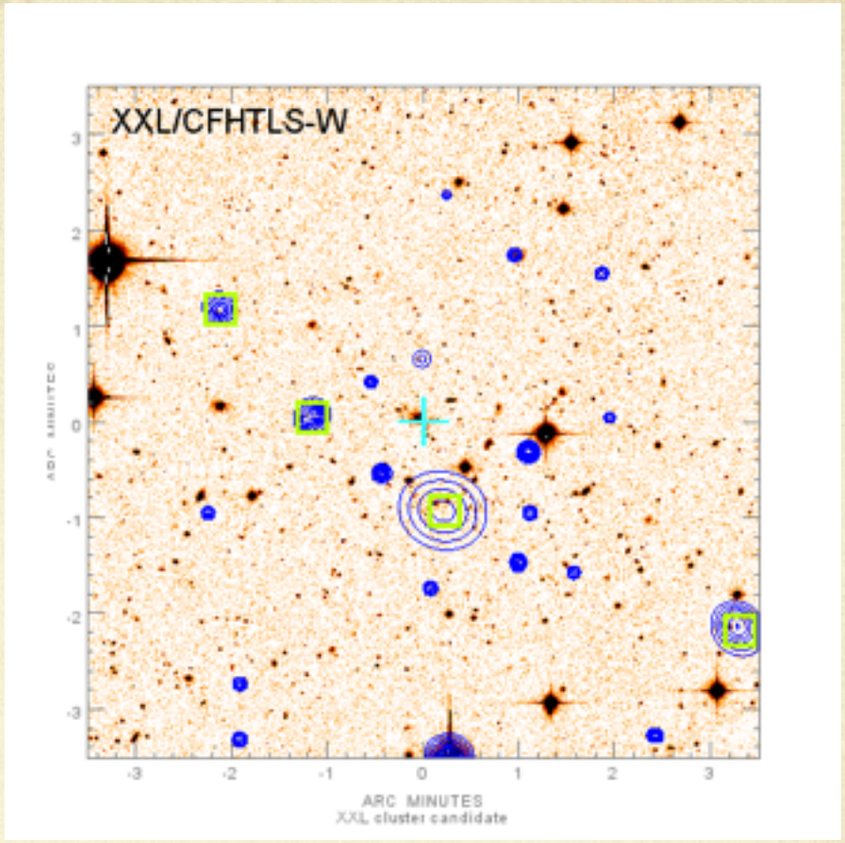
TOTAL (M1+M2+PN) :
CTS[0.5-2 Kev] : 57.41
RATE[0.5-2 Kev] : 1.49133e-02
Off-axis[arcmin] : 7.6
DetML : 41.923
ExtML : 11.428
Ext[arcsec] : 9.87

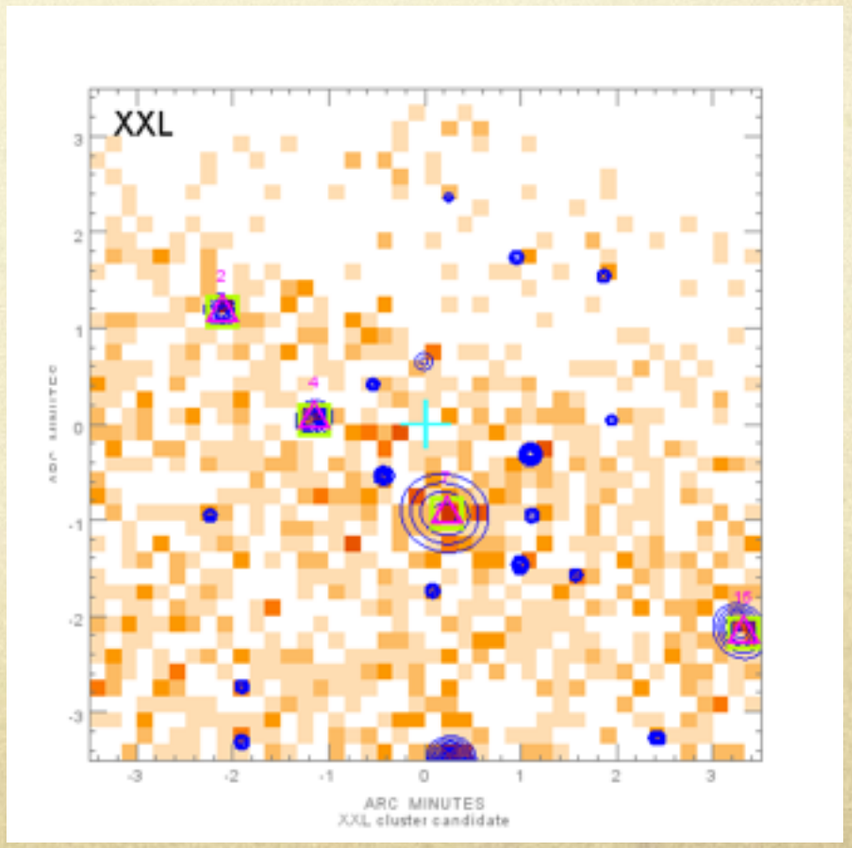
OPT >>> X

Off-axis Impact

z=0.7326

off-axis=11.30





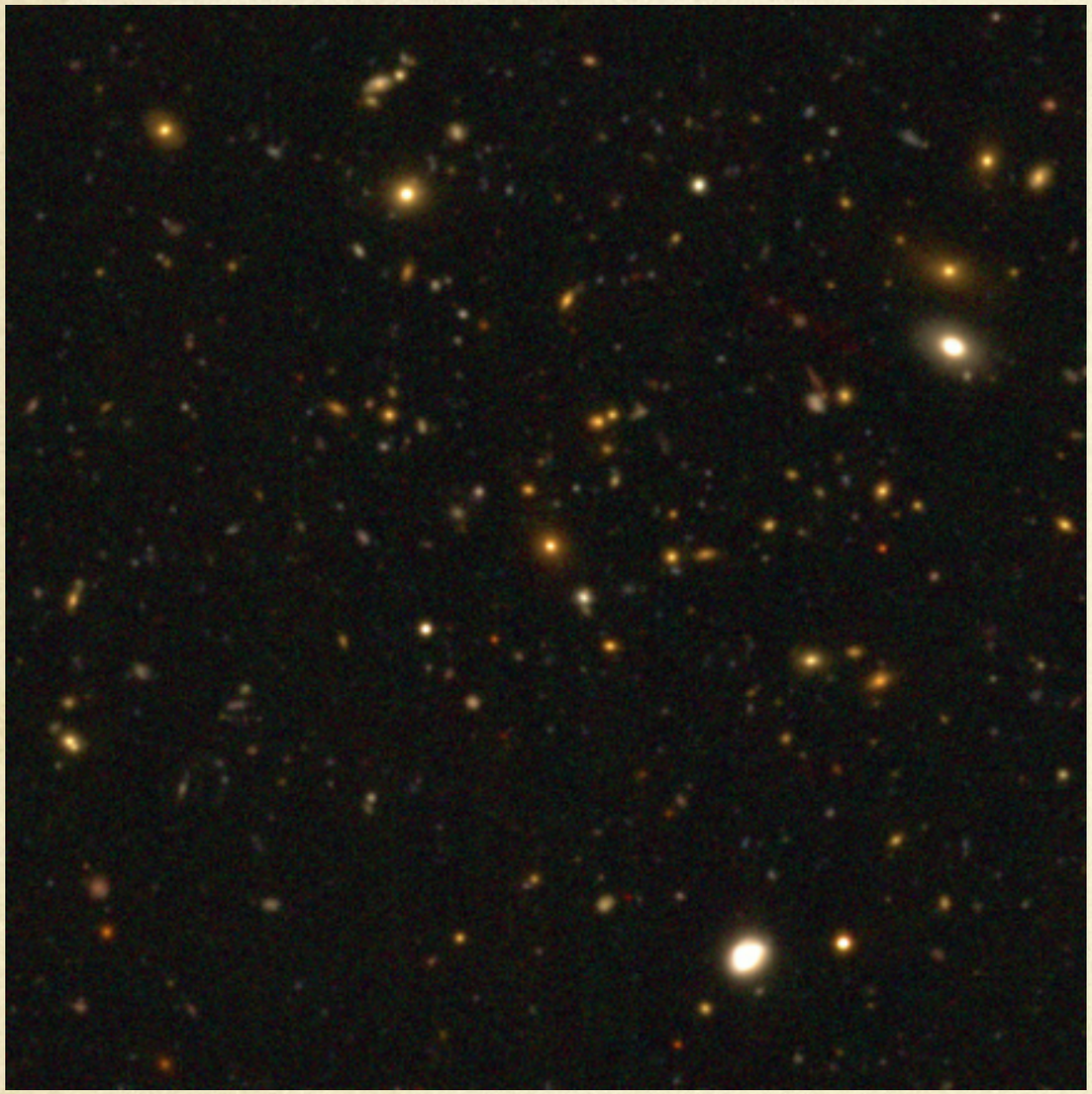
Extended case :

RA : 31.59825
DEC : -5.64144

TOTAL (M1+M2+PN) :
CTS[0.5-2 Kev] : 47.15
RATE[0.5-2 Kev] : 1.50581e-02
Off-axis[arcmin] : 10.4
DetML : 23.864
ExtML : 2.205
Ext[arcsec] : 11.58

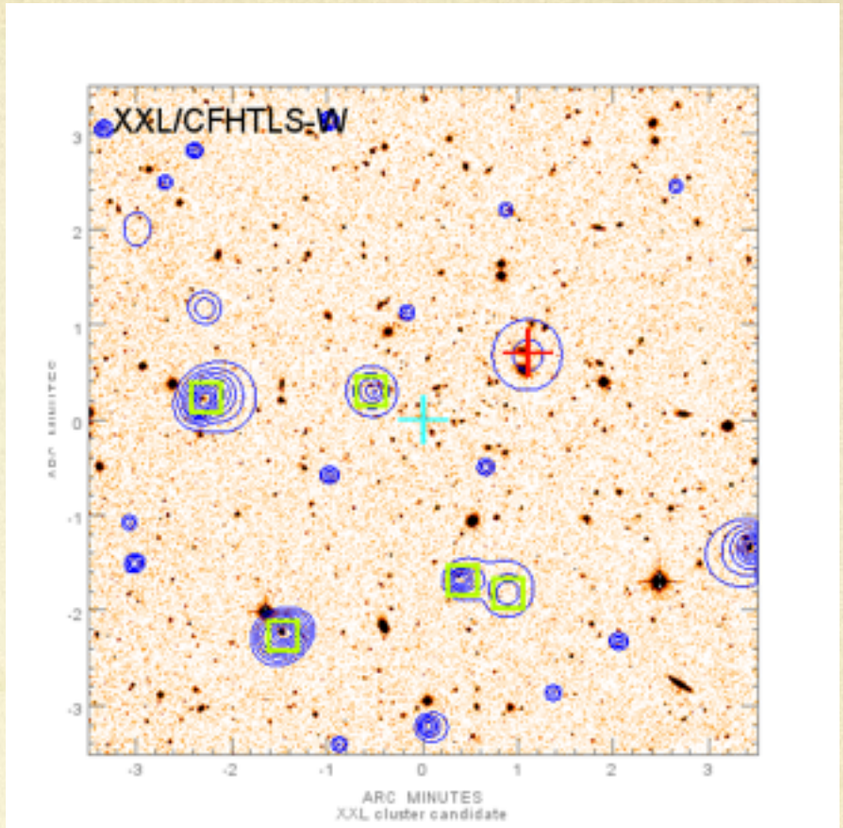
OPT >>> X

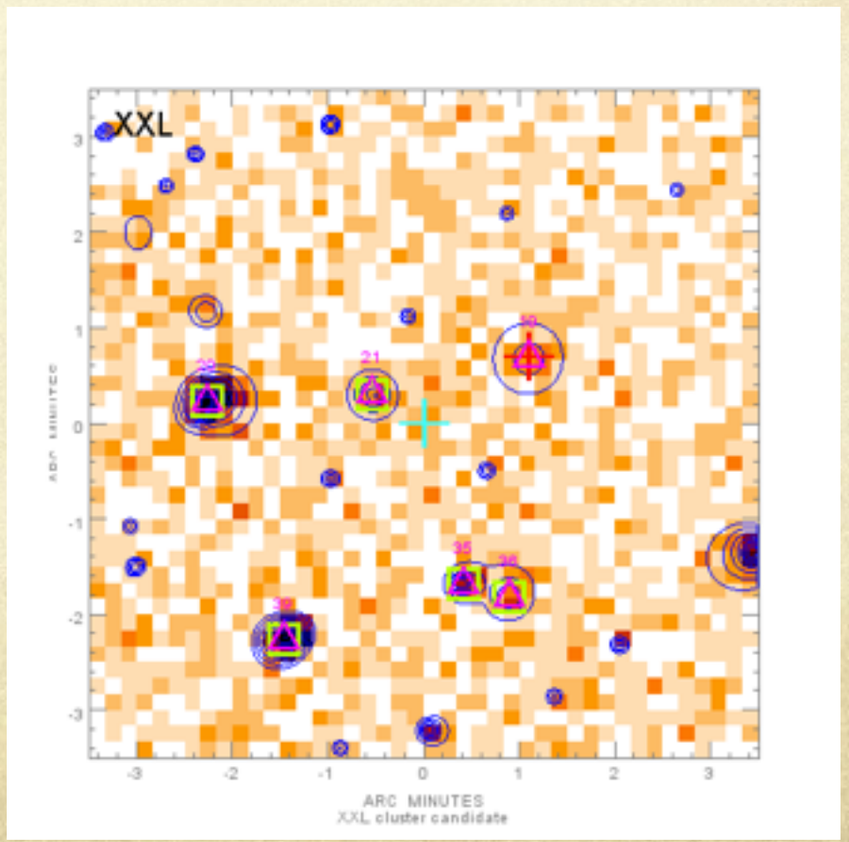
Off-axis Impact



z=0.4715

off-axis=8.81





Extended case :

RA : 32.37434
DEC : -5.67142

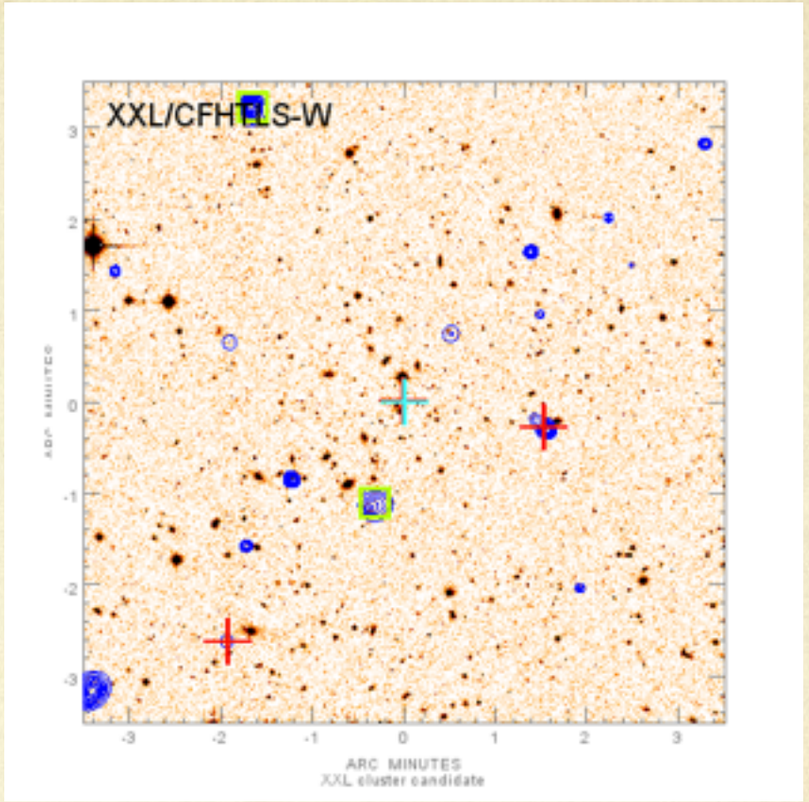
TOTAL (M1+M2+PN) :
CTS[0.5-2 Kev] : 20.78
RATE[0.5-2 Kev] : 8.62966e-03
Off-axis[arcmin] : 9.3
DetML : 17.392
ExtML : 0.000
Ext[arcsec] : 0.27

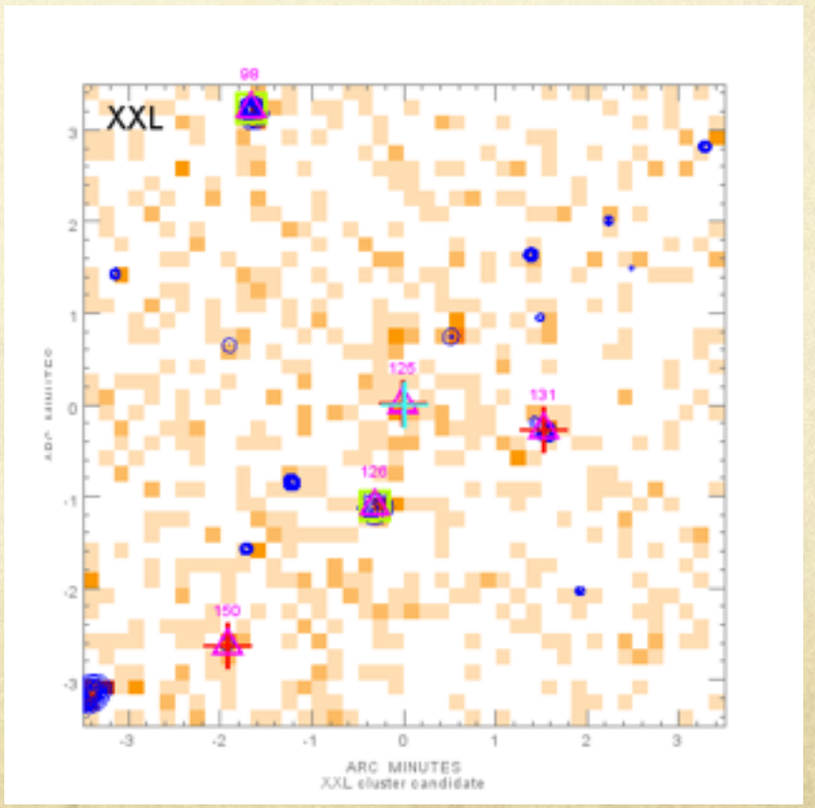
OPT >>> X

Off-axis Impact

z=0.5678

off-axis=9.25





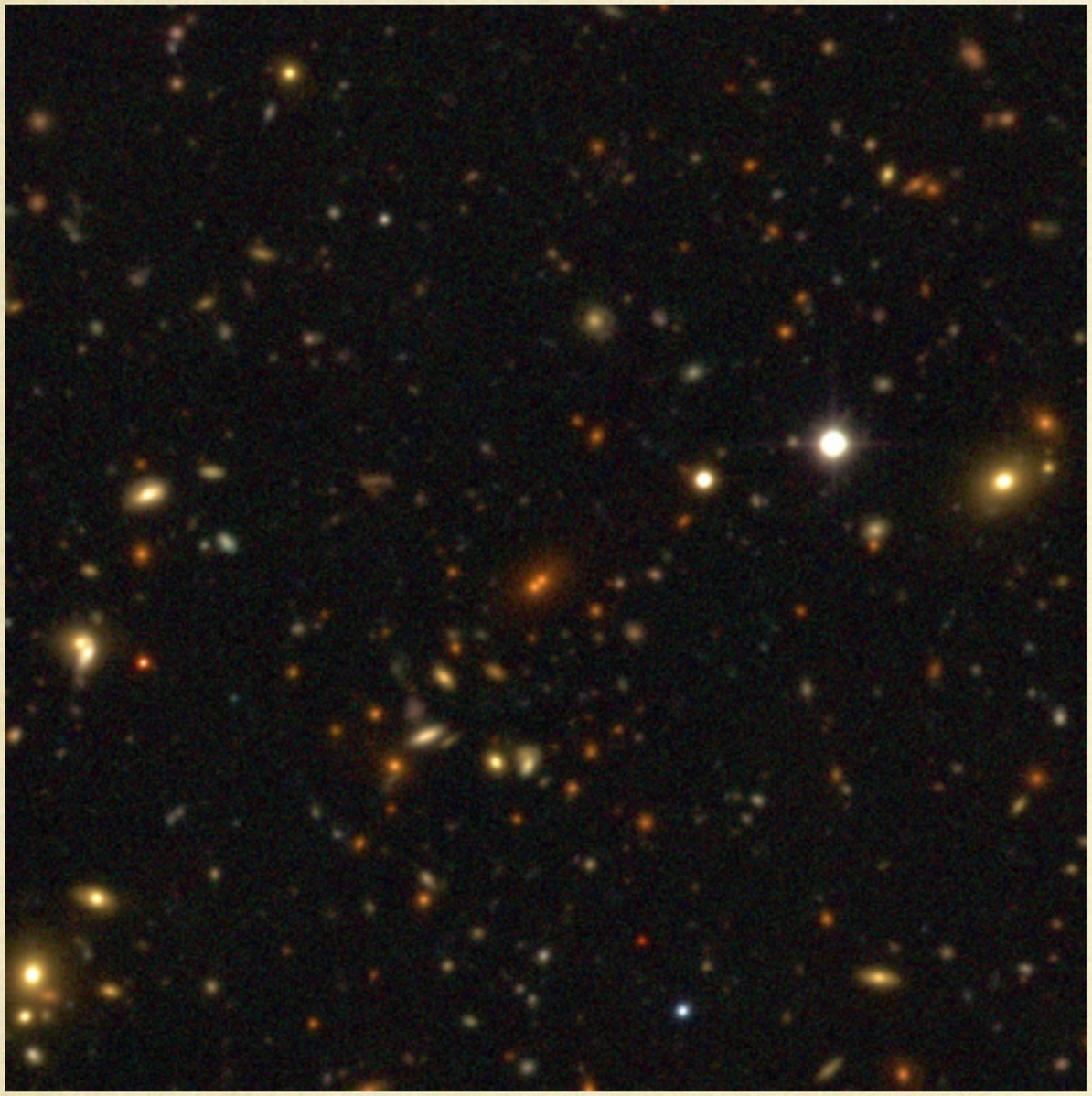
Extended case :

RA : 38.01737
DEC : -5.54971

TOTAL (M1+M2+PN) :
CTS[0.5-2 Kev] : 54.27
RATE[0.5-2 Kev] : 4.90964e-02
Off-axis[arcmin] : 9.2
DetML : 11.942
ExtML : 11.112
Ext[arcsec] : 40.92

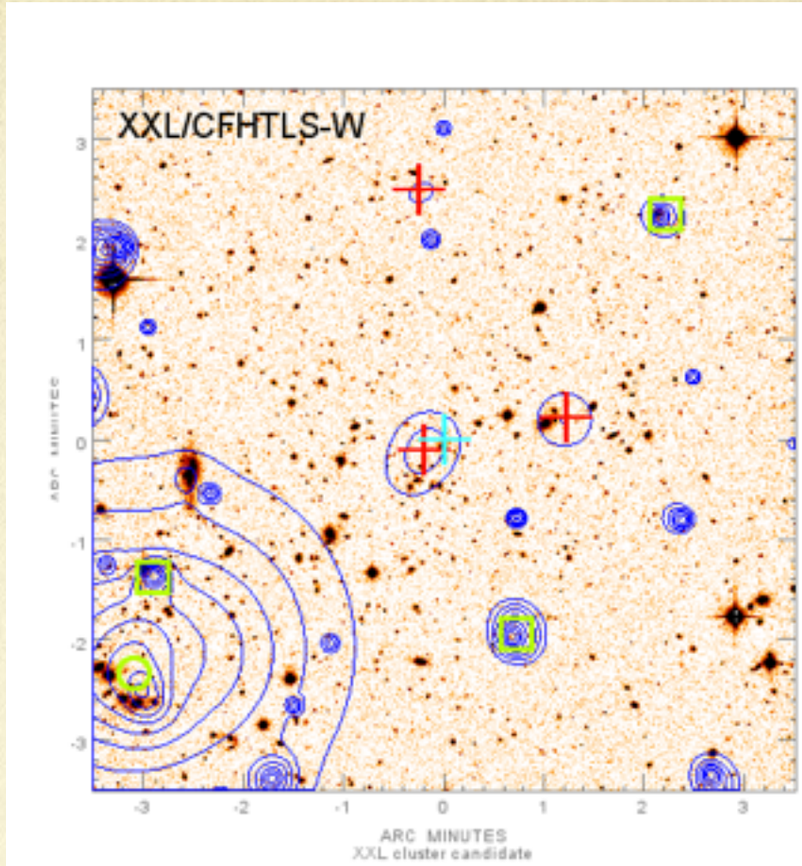
OPT >>> X

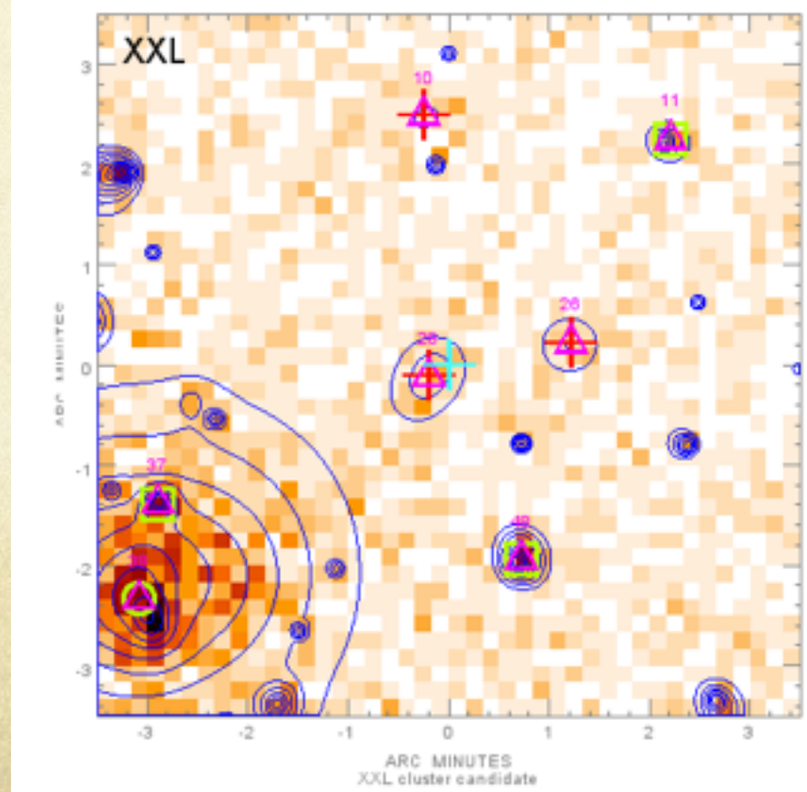
Miss



z=0.6545

off-axis=7.09

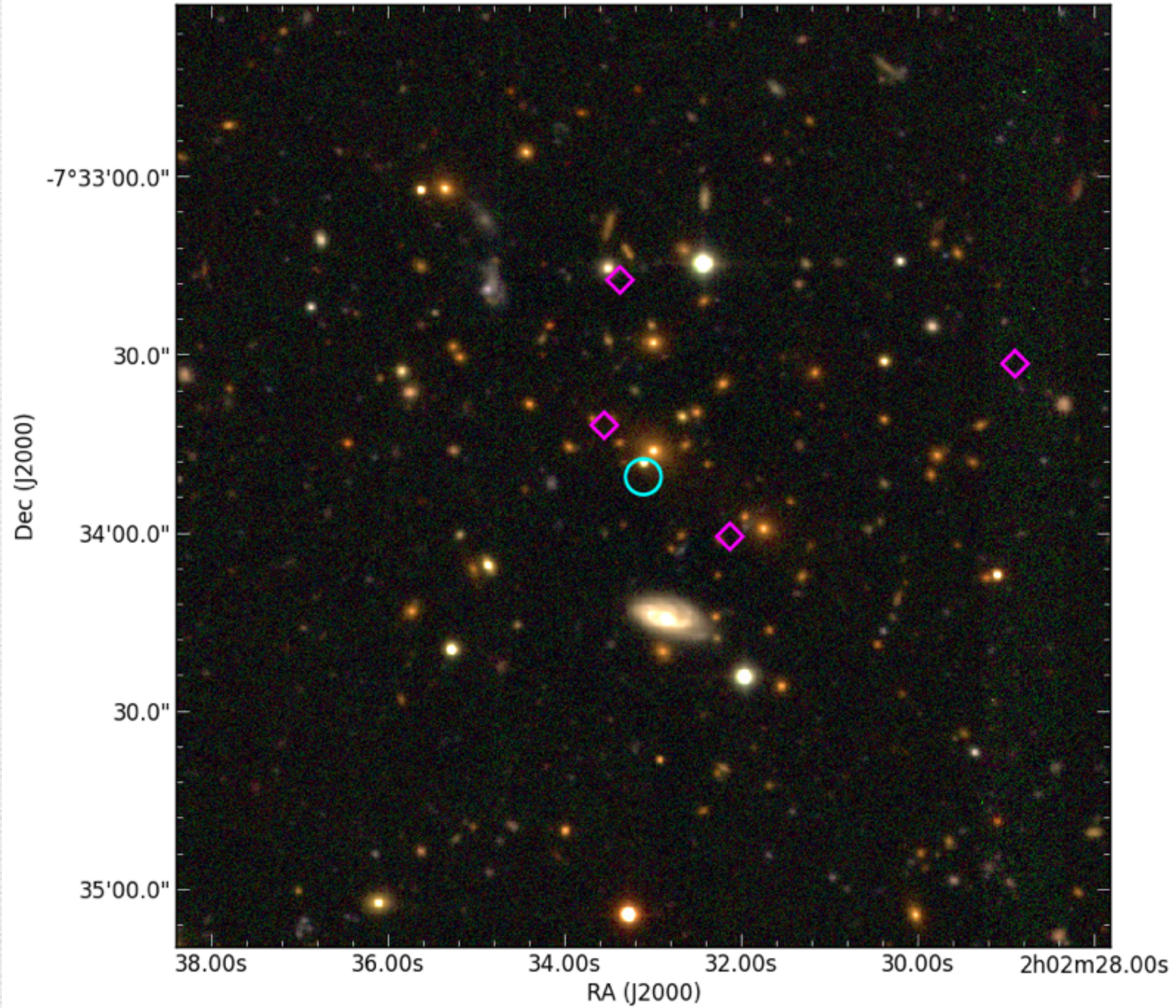




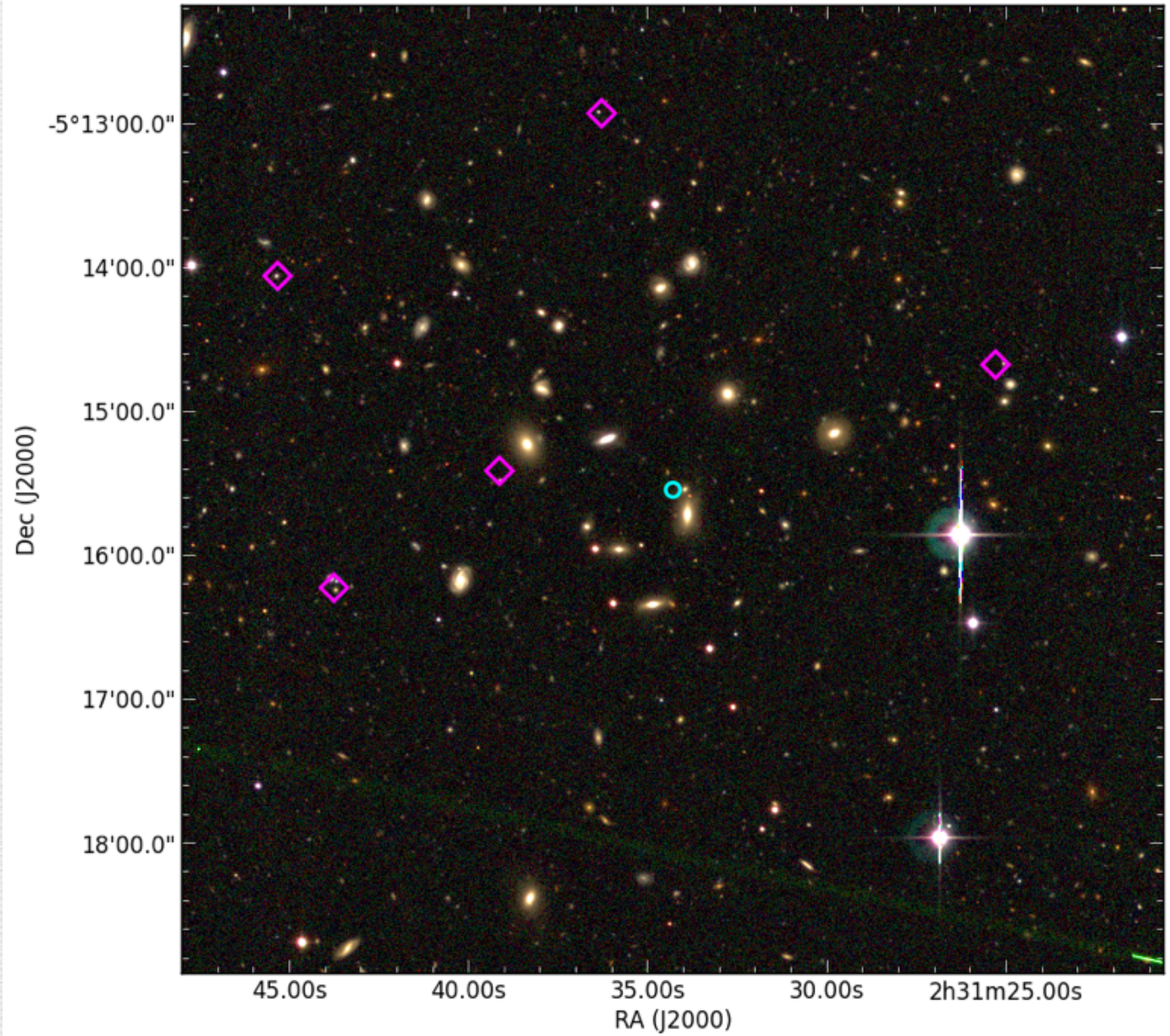
Extended case :

RA : 31.30084
DEC : -5.69895

TOTAL (M1+M2+PN) :
CTS[0.5-2 Kev] : 52.69
RATE[0.5-2 Kev] : 2.96785e-02
Off-axis[arcmin] : 6.7
DetML : 6.172
ExtML : 6.070
Ext[arcsec] : 33.14


-7°33'00.0"
30.0"
34'00.0"
30.0"
35'00.0"
Dec (J2000)
38.00s
36.00s
34.00s
32.00s
30.00s
2h02m28.00s
RA (J2000)

z=0.538


-5°13'00.0"
14'00.0"
15'00.0"
16'00.0"
17'00.0"
18'00.0"
Dec (J2000)
45.00s
40.00s
35.00s
30.00s
2h31m25.00s
RA (J2000)

z=0.140

OPT >>> X

Unmatched

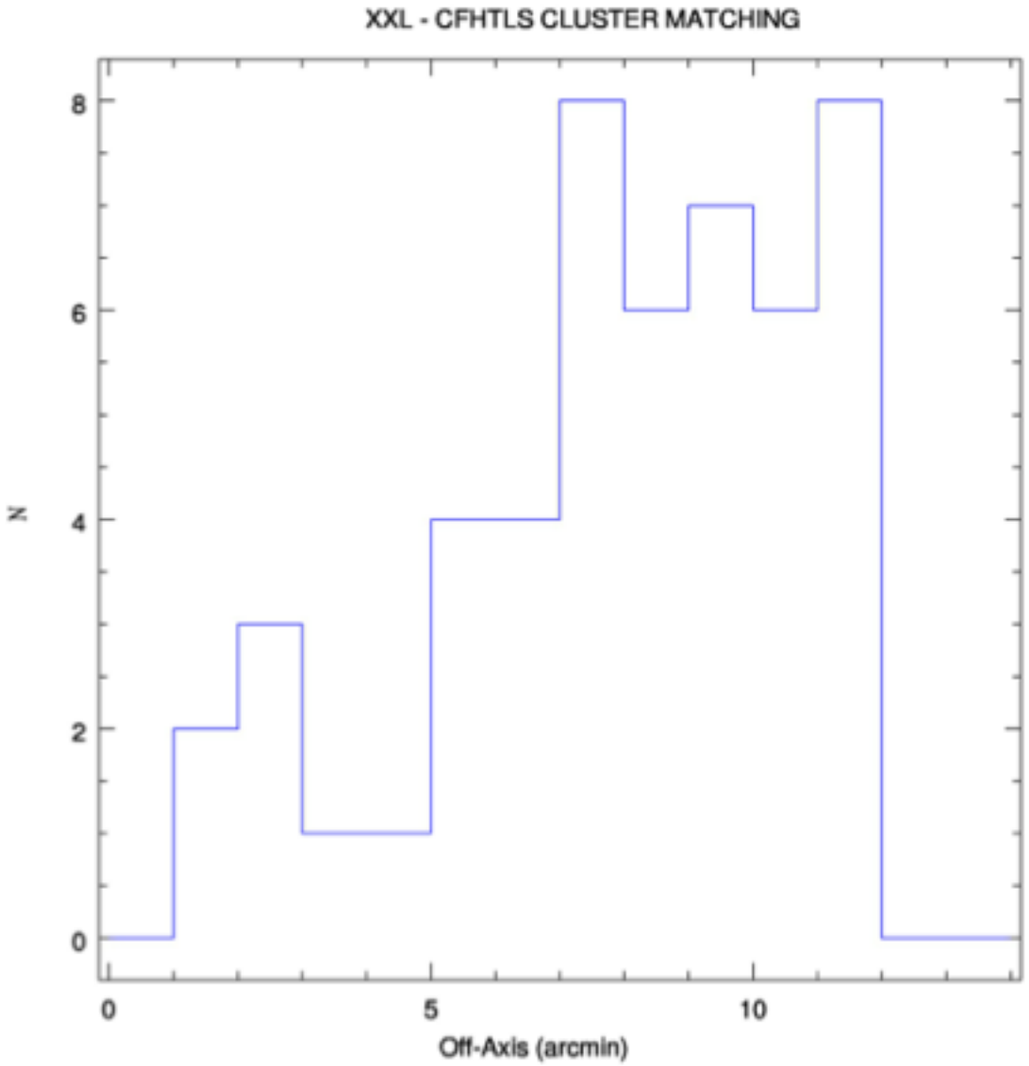
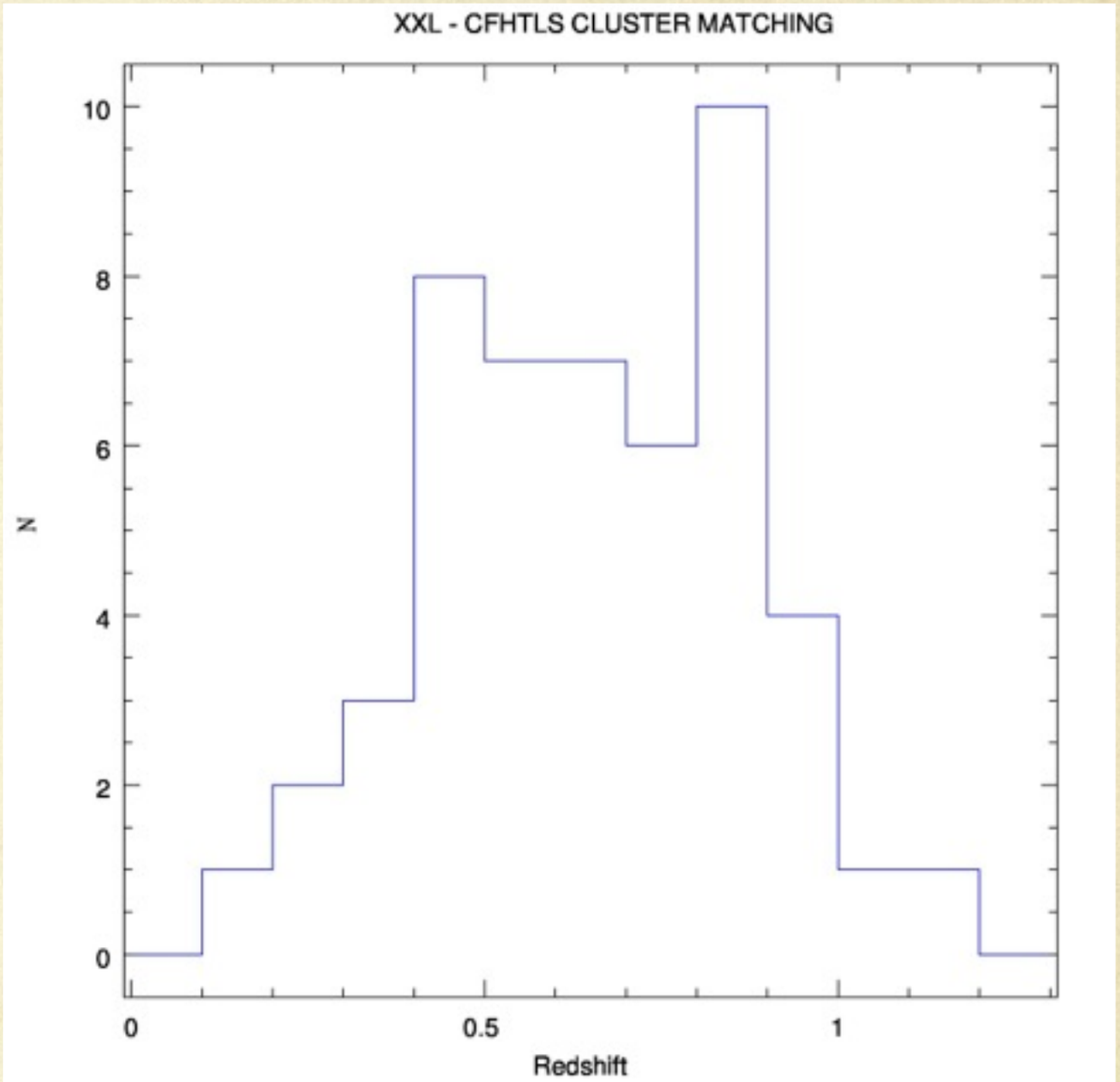


Fig. 5. Position offset from the center of X-ray pointing for the unmatched clusters.



Numbers...

Unmatched: 45 (25 of them are examined)

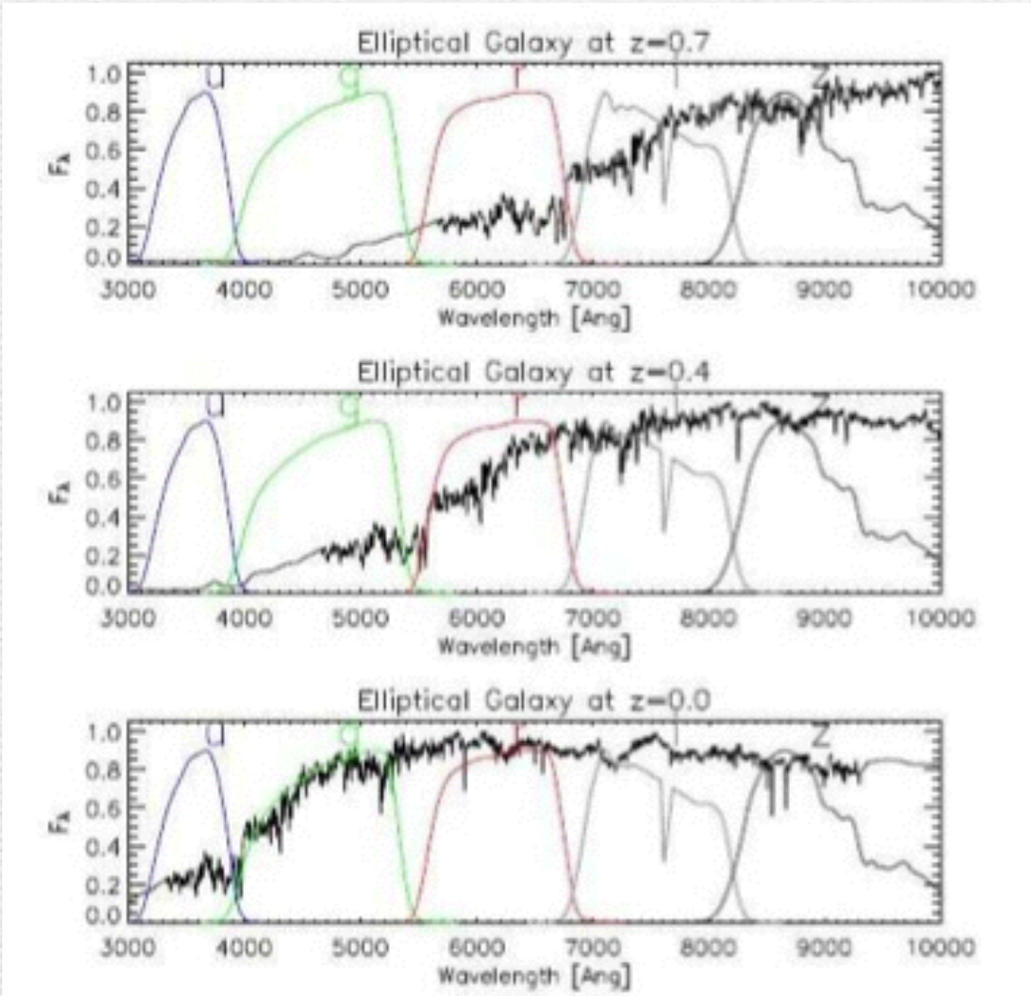
12/25 are contaminated with AGN(s)

8/25 are without a X-ray detection
(possibly due to off-axis)

5/25 overdensity are not clear

Çoklu Dalgaboyunun Önemi

Low-z	Mid-z	High-z	« Desert »	Lyman-break proto clusters
$z < 0.5$	$0.5 < z < 0.8$	$0.8 < z < 1.5$	$1.5 < z < 2.2$	$2.2 < z$
> 10.000	1000's	10's	1's	10's

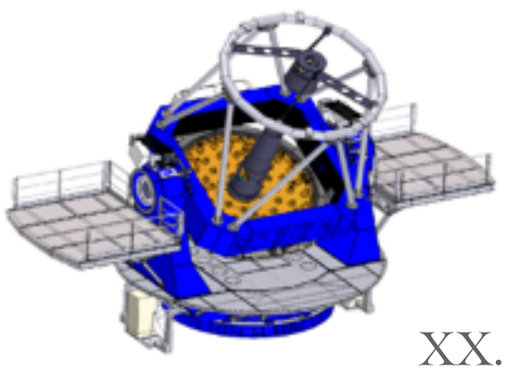


Origin	Mean	Redshift
gas	X	
gas	SZ	any
DM	lensing	not high
galaxies	Opt	$z < 1.$
	+NIR	$z < 1.6$
	+IR	$z < 2.2$

Bilimsel Gerekçeler Işığında DAG Teleskobu için Düşünülen Olası Odak Düzlemi Aygıtları ve İşbirlikleri

Sinan Aliş
salis@istanbul.edu.tr

Mehtap Özbey Arabacı, Sinan Kaan Yerli, Cahit Yeşilyaprak,
Tolga Güver, Onur Keskin, Laurent Jolissaint, Tenay Saguner



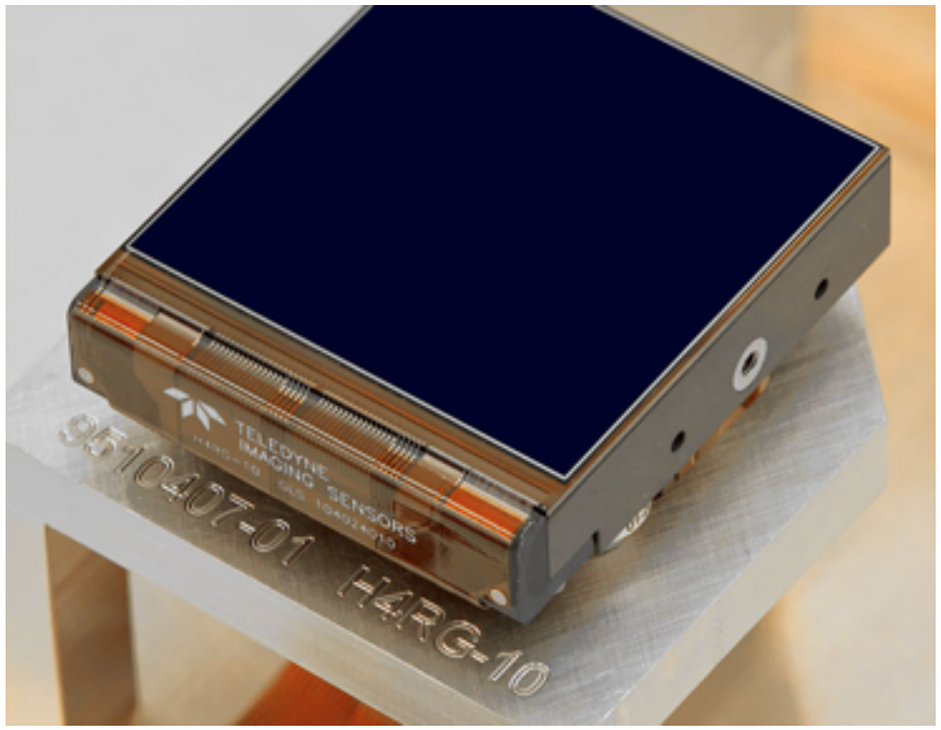
DAG - Proje Bilimsel Kurulu adına

XX. Ulusal Astronomi Kongresi, 5-9 Eylül 2016, Atatürk Üniversitesi, Erzurum

DAG İLK IŞIK AYGITLARI İÇİN ÖNERİLER

NIR Görüntüleyici

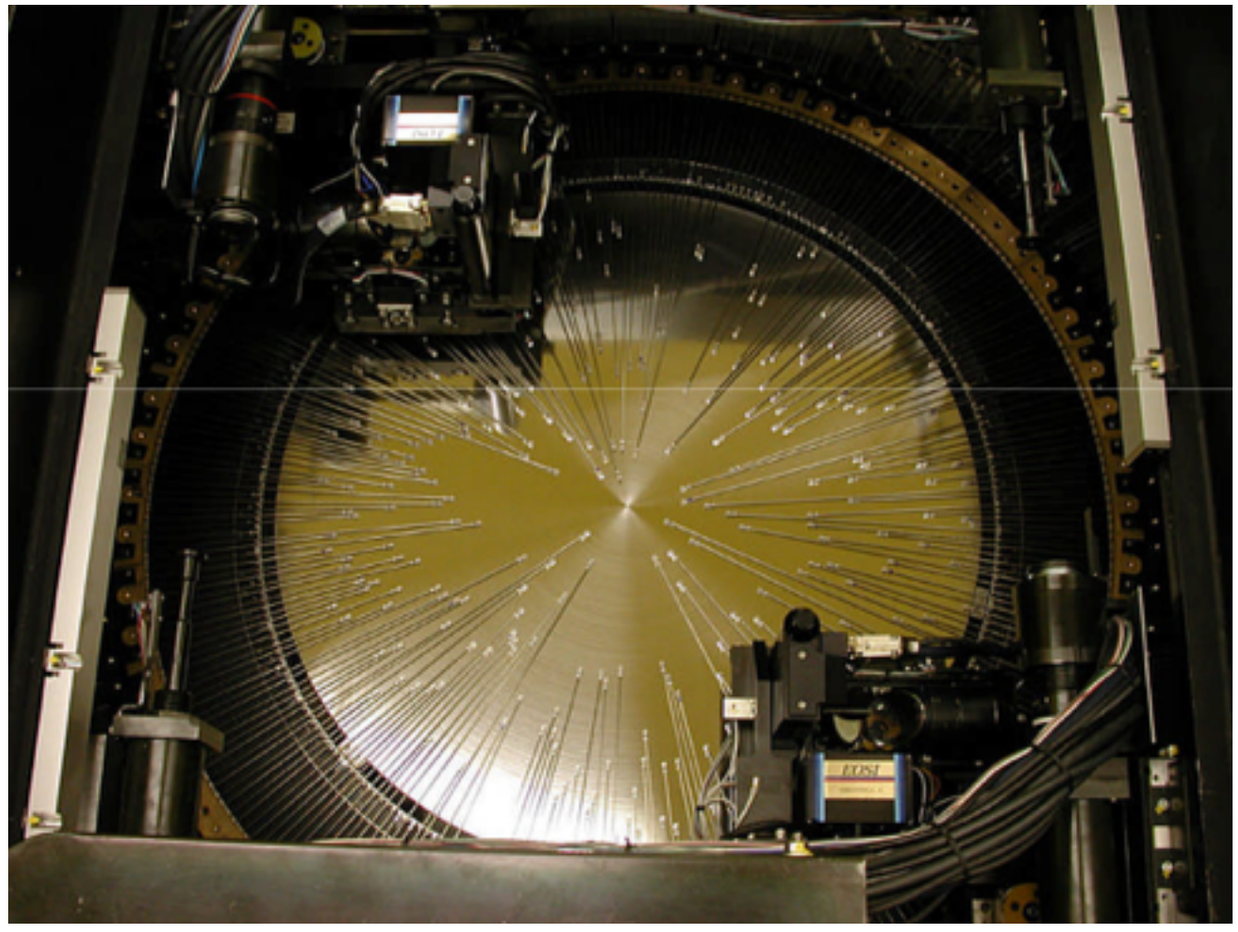
Hawaii 4RG



- Yeni Nesil
- Geniş Alan
- Benzersizlik

VIS Görüntüleyici-Tayfçeker

- 4000 - 10000 A çalışma aralığı
- R ~ 200 - 5000
- Robotik MOS



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X X L

The ultimate XMM extragalactic survey

die Kunst über in der Wissenschaft

XXL Projesi: Galaksi Kümeleri Taraması

Sinan ALİŞ

İstanbul Üniversitesi, Fen Fakültesi, Astronomi ve Uzay Bilimleri Bölümü

Laboratoire Lagrange, Observatoire de la Côte d'Azur

salis@istanbul.edu.tr

Christophe Benoist, Sophie Maurogordato

ve XXL Ekibi

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