Julian Merten

Abell 2744: A New Bullet ... and more

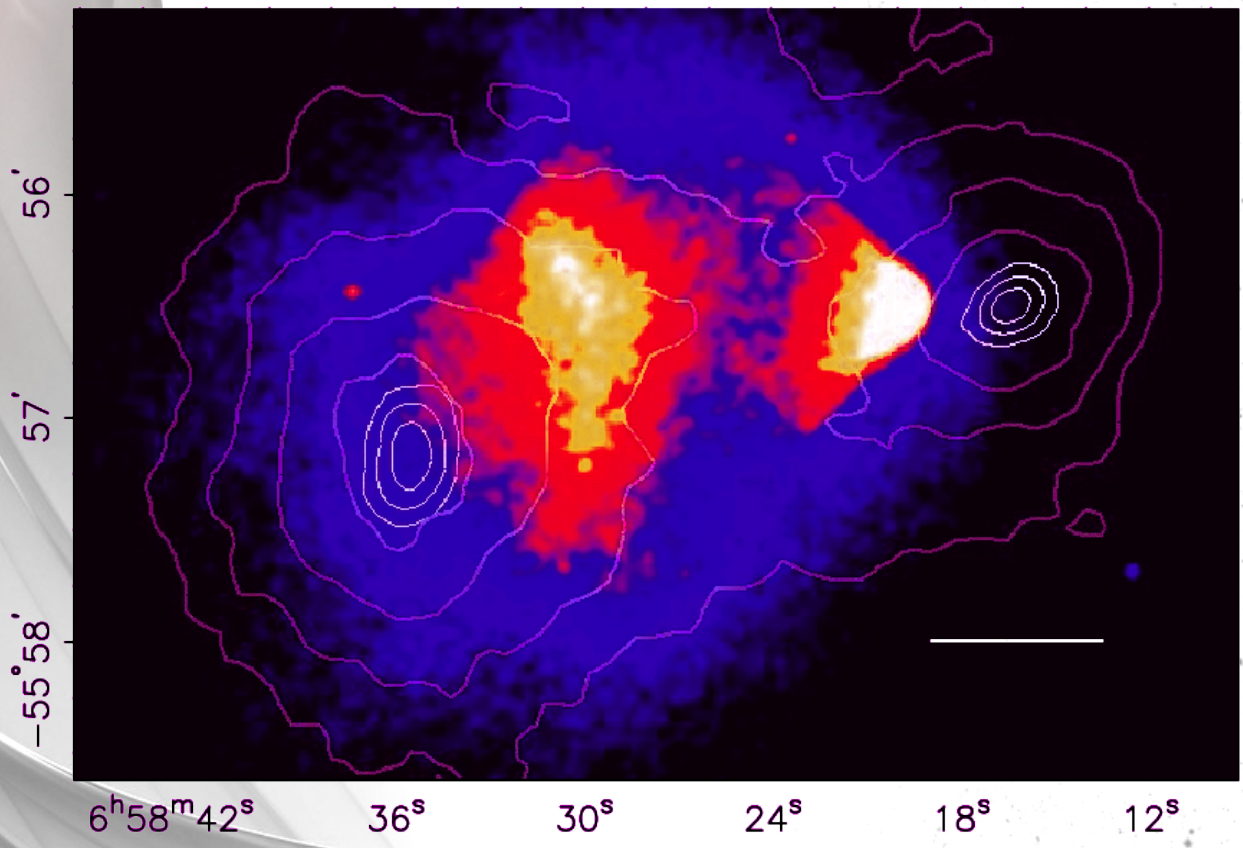
Institut für Theoretische Astrophysik
Zentrum für Astronomie
Universität Heidelberg

October 28th, 2010

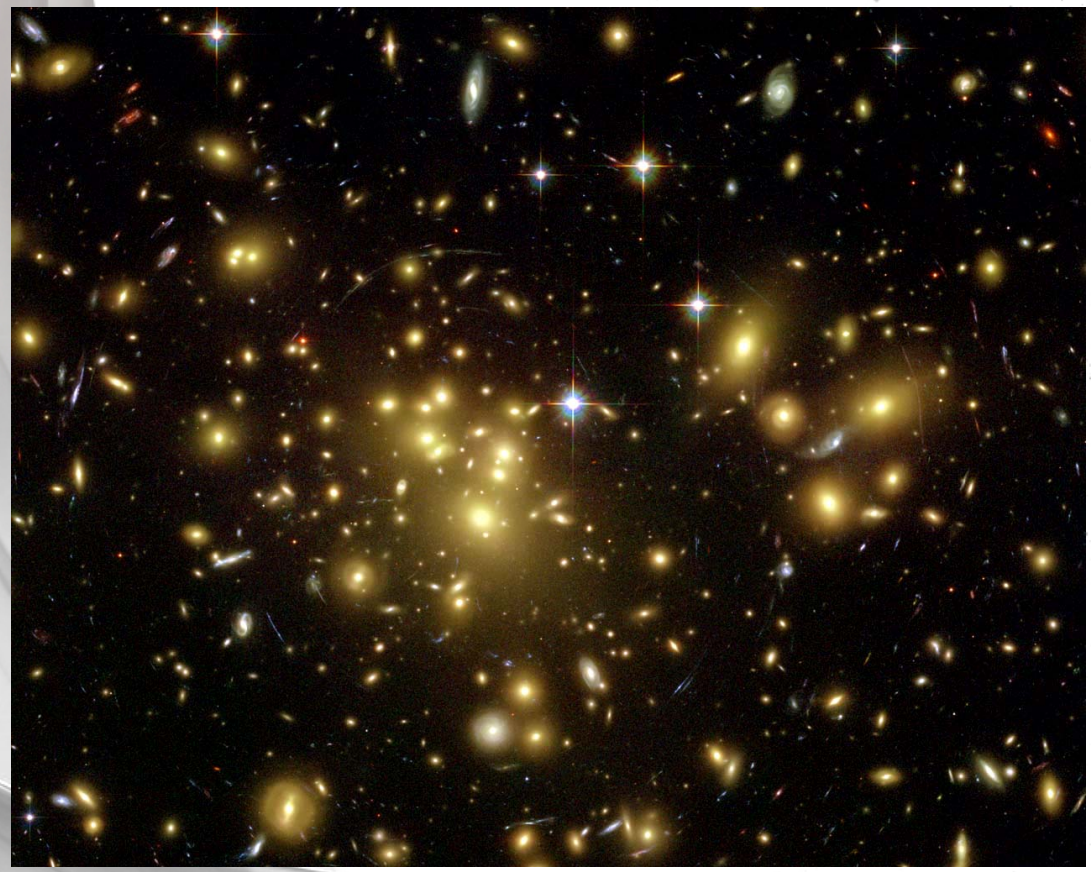
Two ways of doing cosmology with clusters

Two ways of doing cosmology with clusters

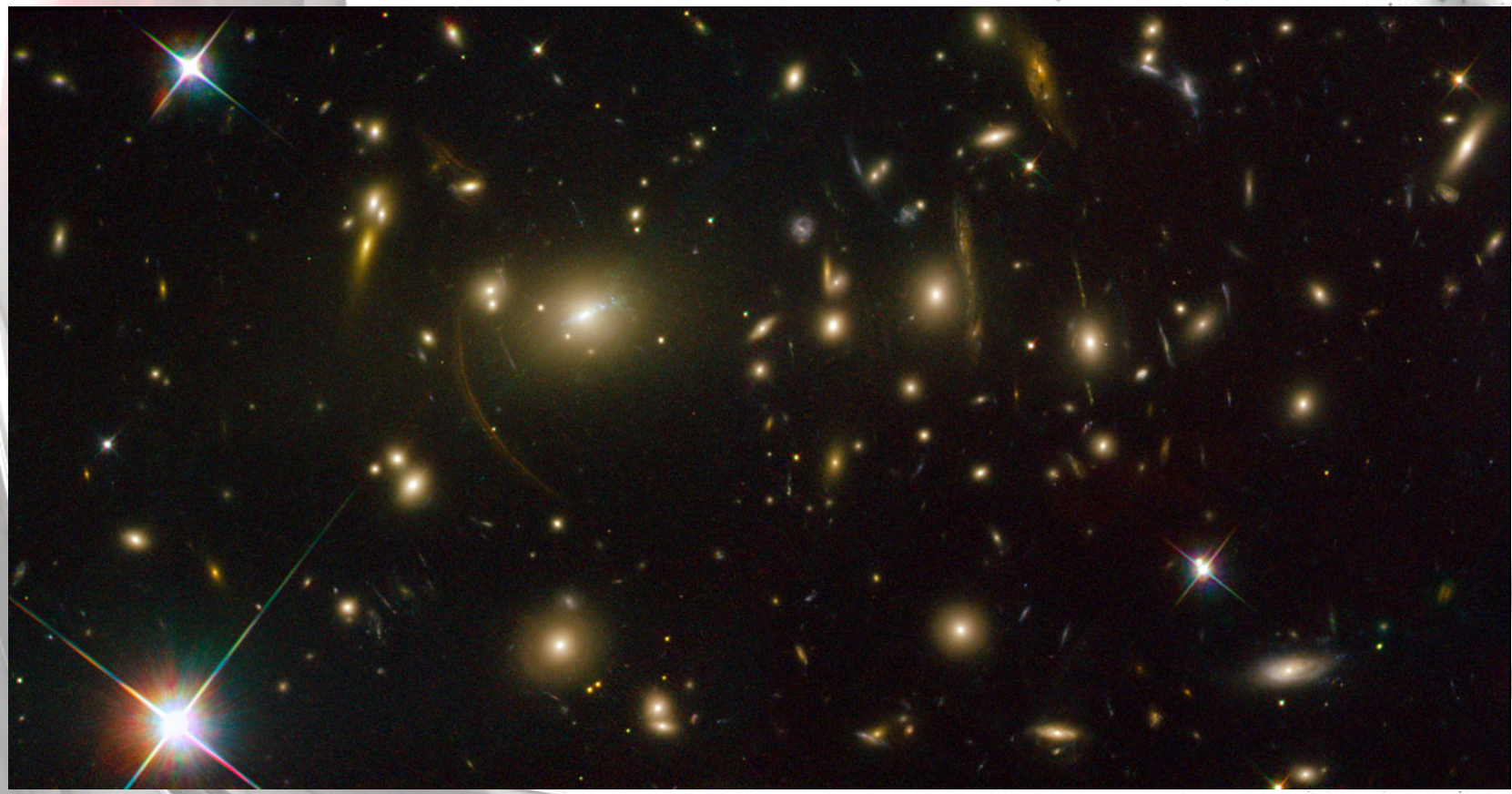
A gallery



A gallery



A gallery



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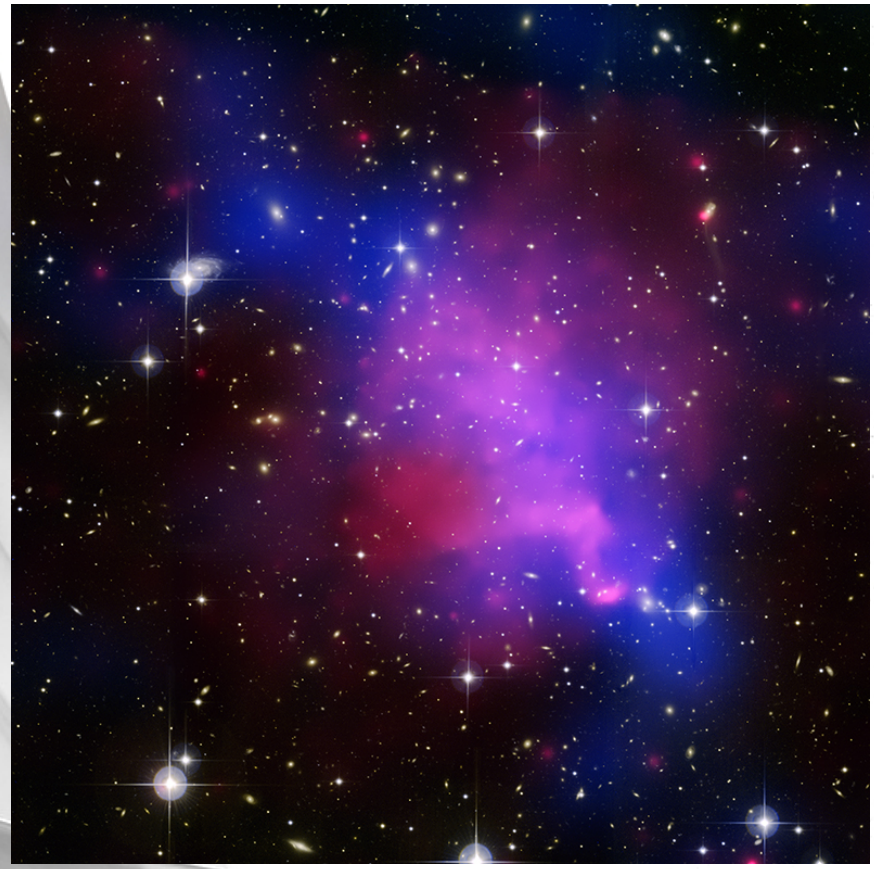


Abell 2744: Investigators

United States

- R. A. Dupcke (ACS P.I.) (Michigan)
- J. Krick (Caltech)
- J. N. Bregman (Michigan)
- D. Coe (VLT P.I.) (Caltech/JPL)
- R. A. Bernstein (Santa Cruz)
- L. Moustakas (JPL)
- B. Frye (UC San Francisco)

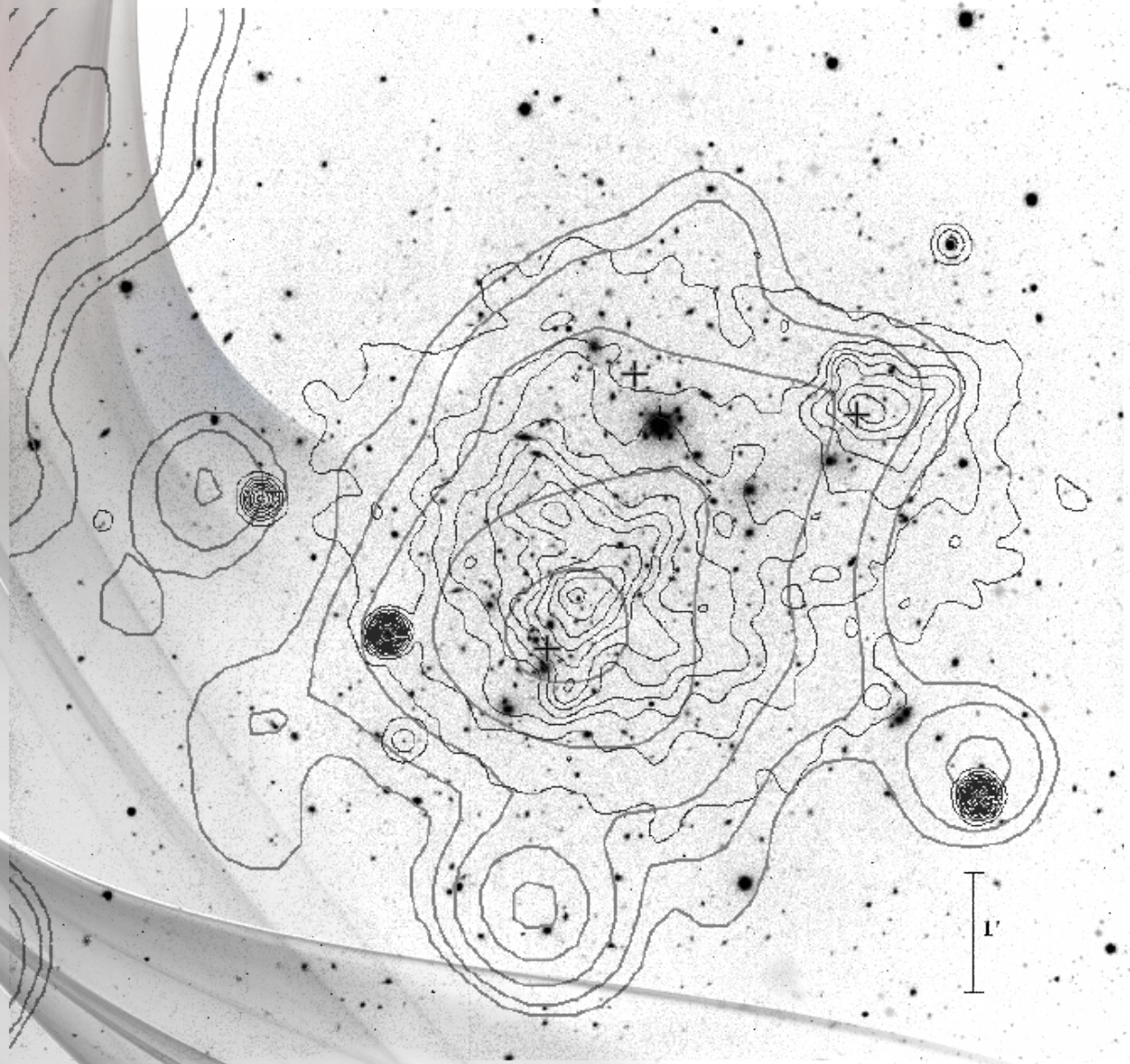
Europe

- N. Benitez (Granada)
- T. Broadhurst (Bilbao)
- R. Massey (Edinburgh)
- J. Merten (Heidelberg)
- R. A. Bernstein (Santa Cruz)
- M. Meneghetti (Bologna)
- Y. Jimenez Teja (Granada)

The rest of the world

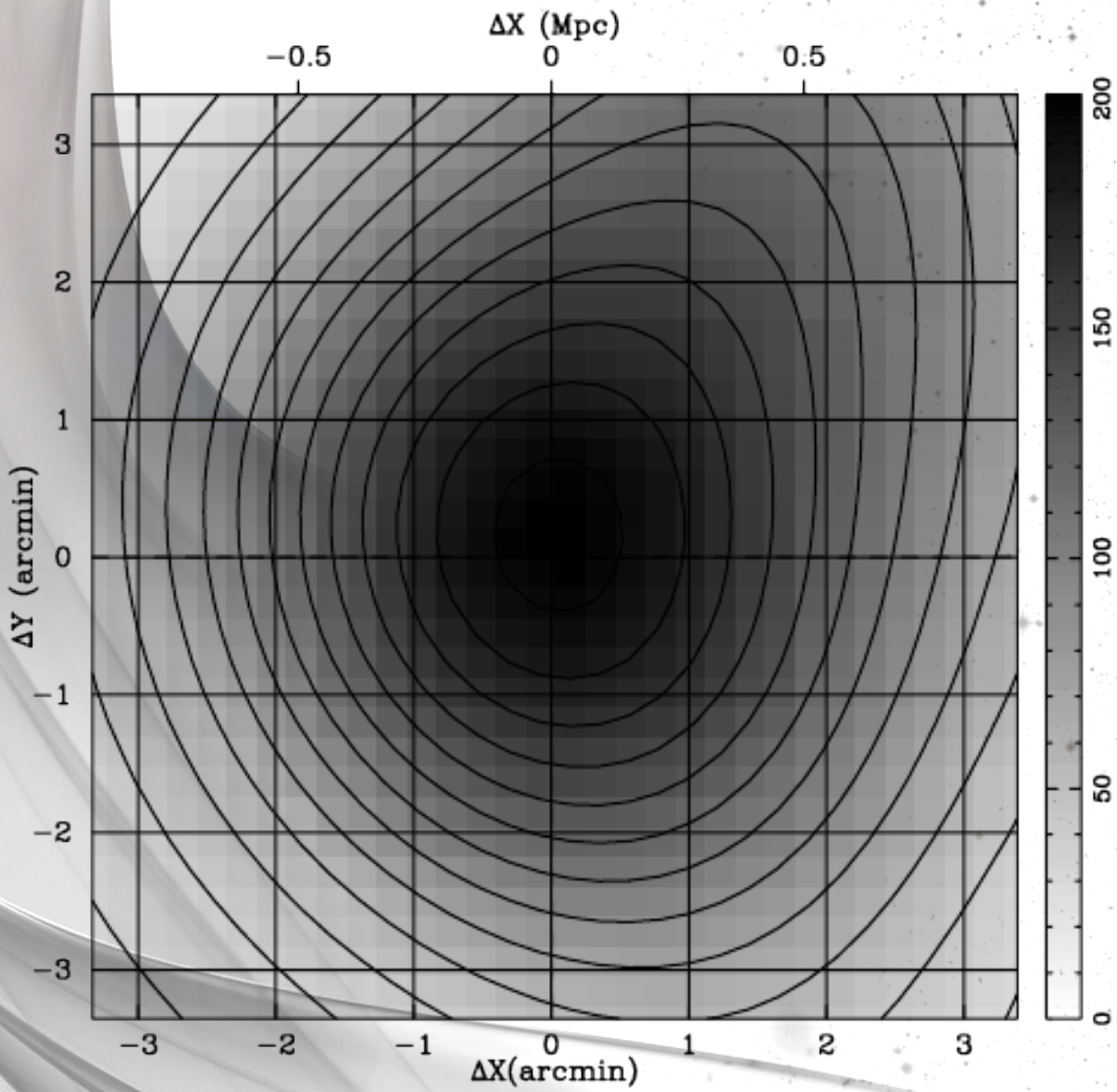
- L. Sodre (Sao Paolo)
- E. Cypriano (Sao Paolo)
- A. Zitrin (Tel Aviv)
- F. Braglia (Vancouver)

Abell 2744: As seen so far



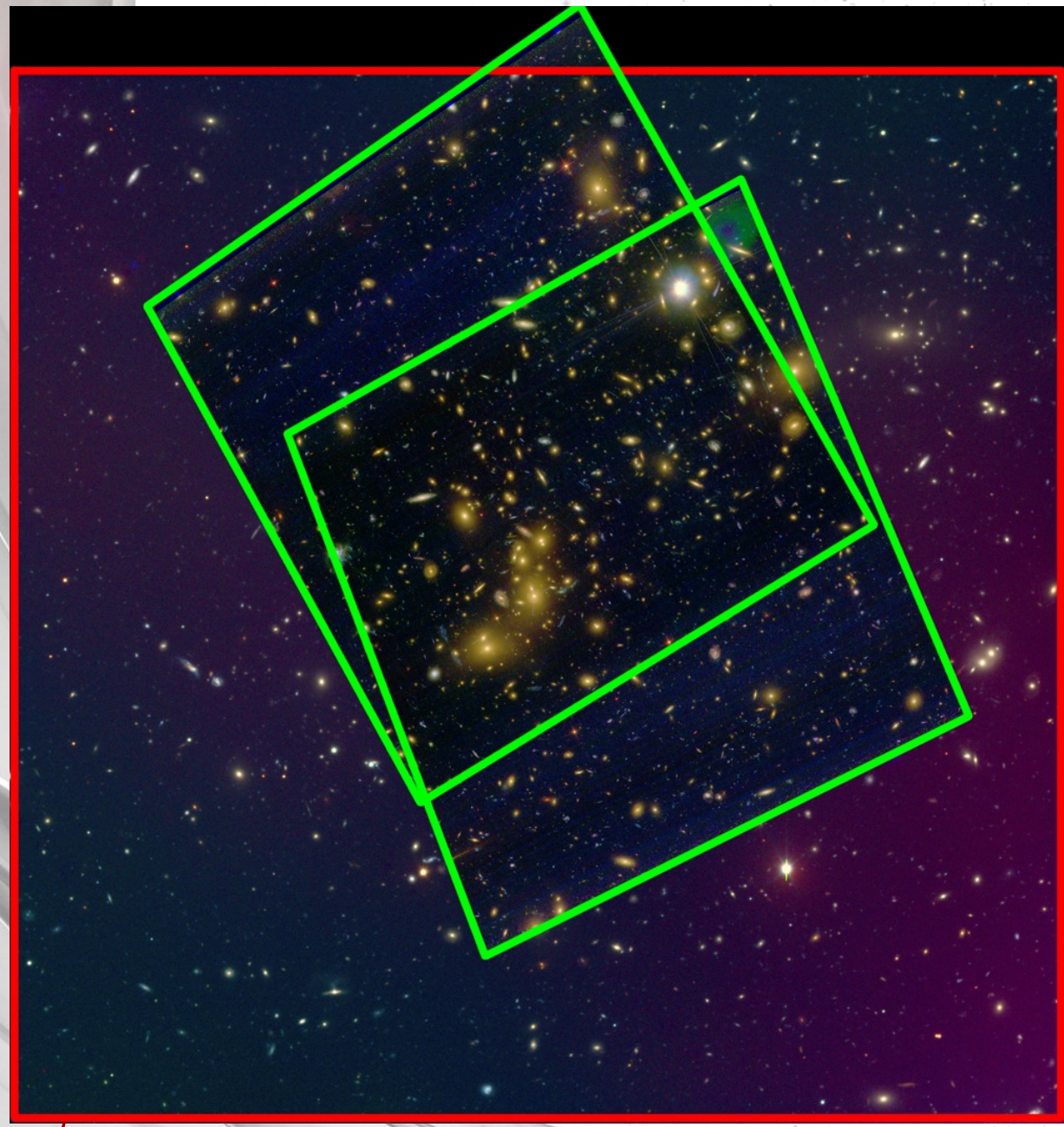
(Govoni01+, Boschin06+, Braglia08+, Kempner04+)

Abell 2744: As seen so far

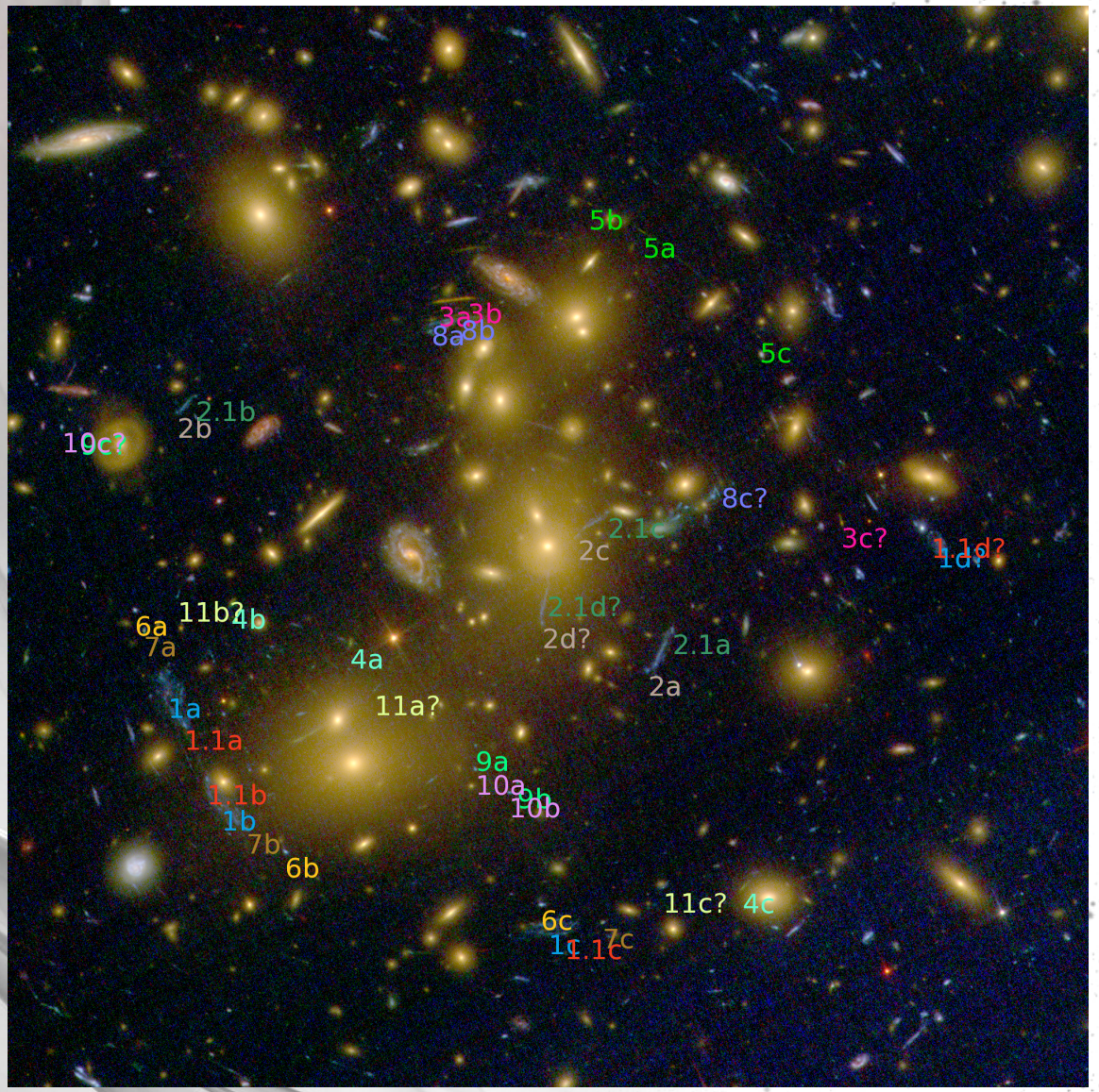


(Cypriano04+)

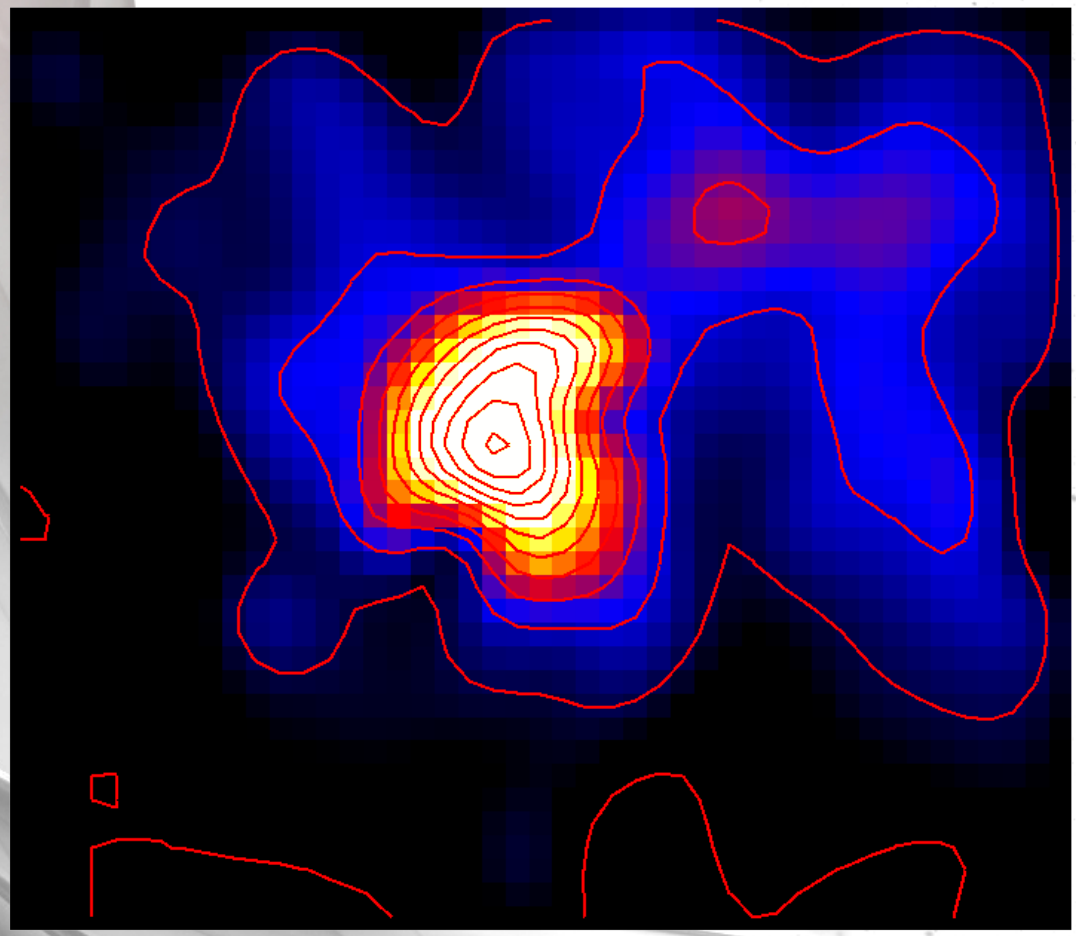
Abell 2744: Dataset



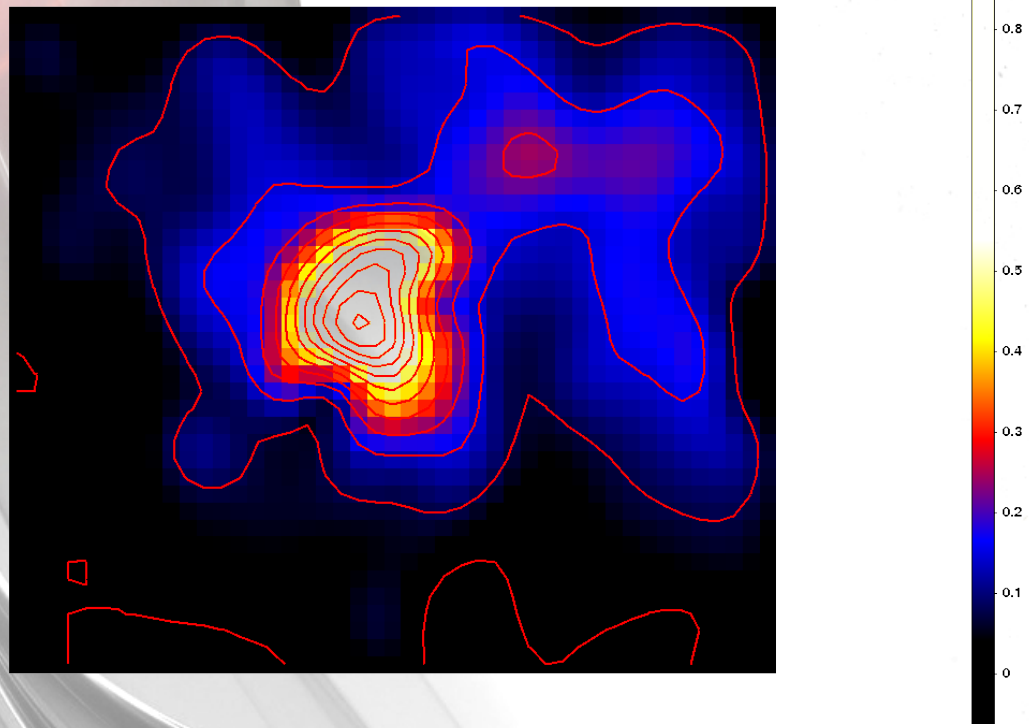
First results



First results

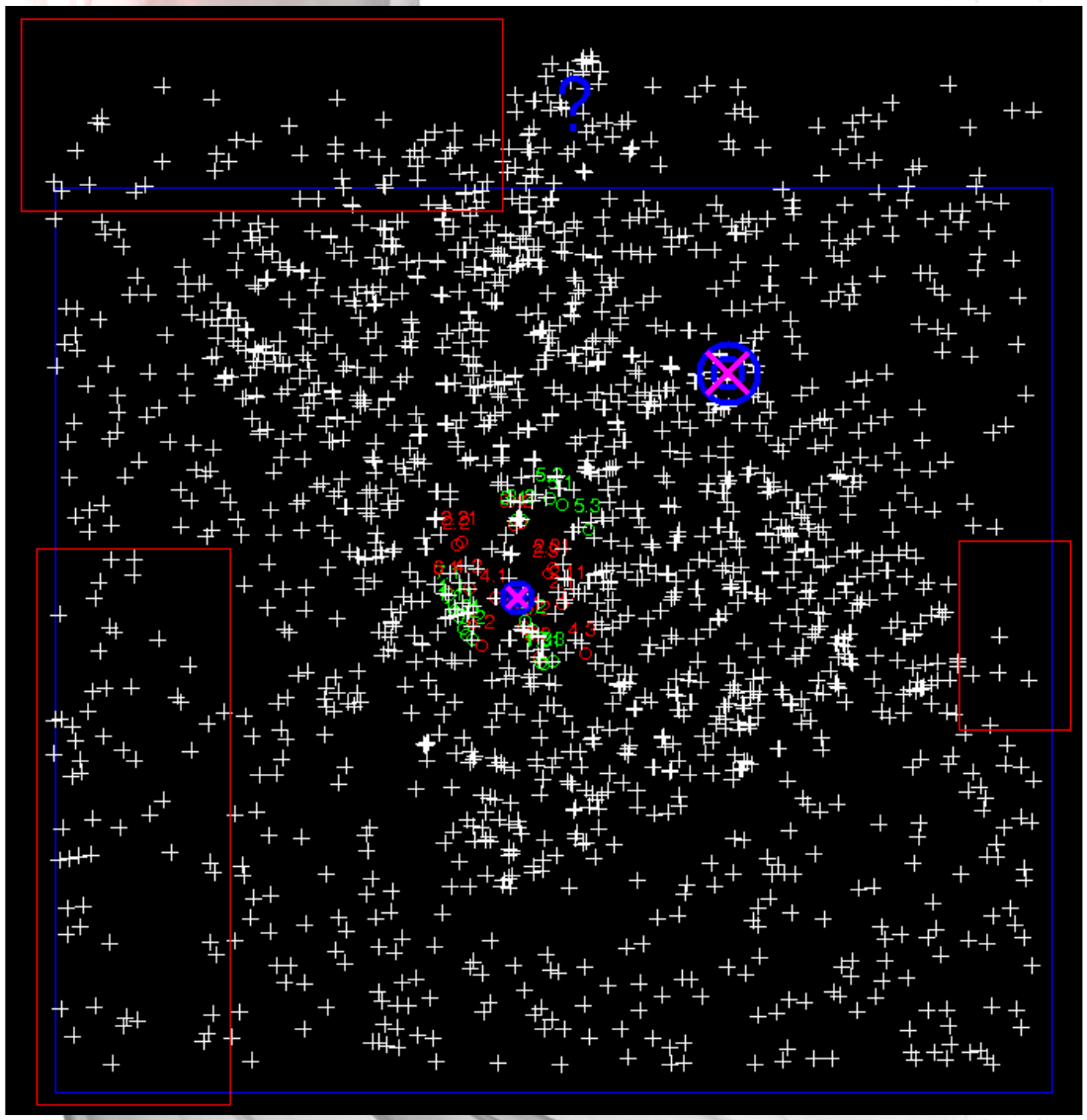


Abell 2744: Issues



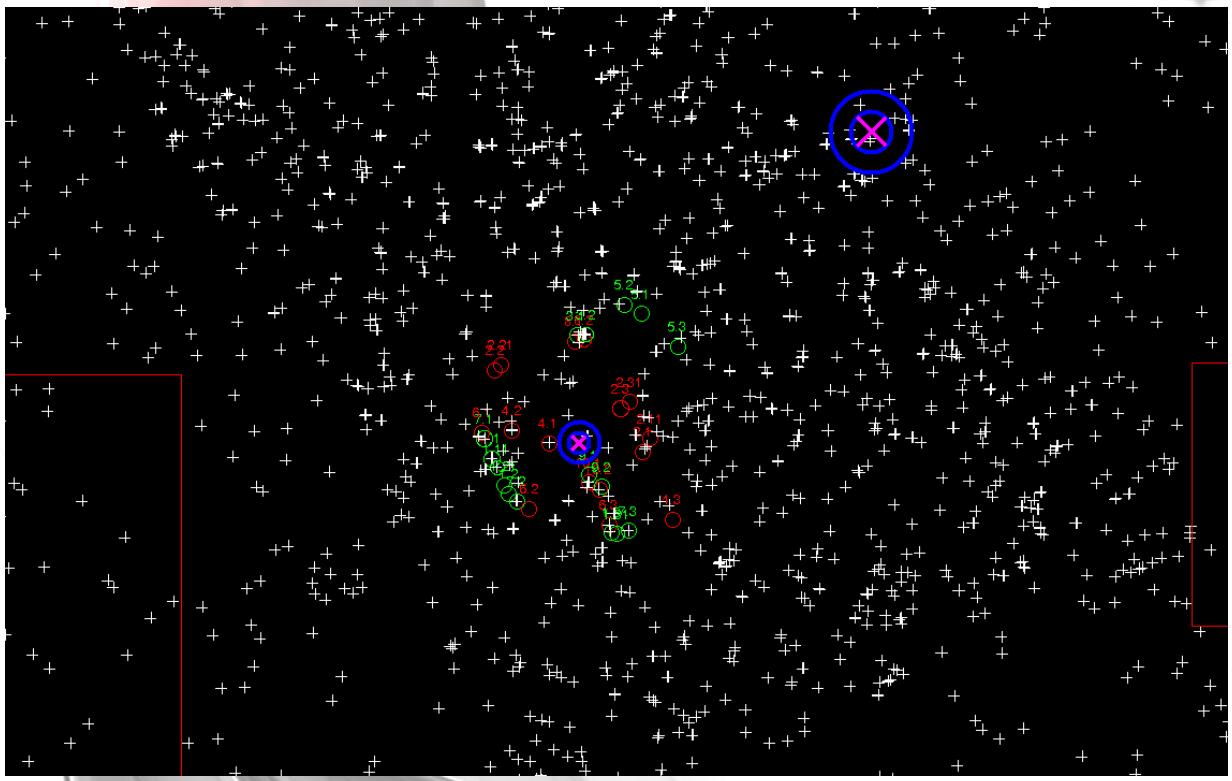
- Strong lensing of the NW peak?

Abell 2744: Issues



- Strong lensing of the NW peak?
- Low resolution in the outskirts
  $\Rightarrow$ SUBARU imaging

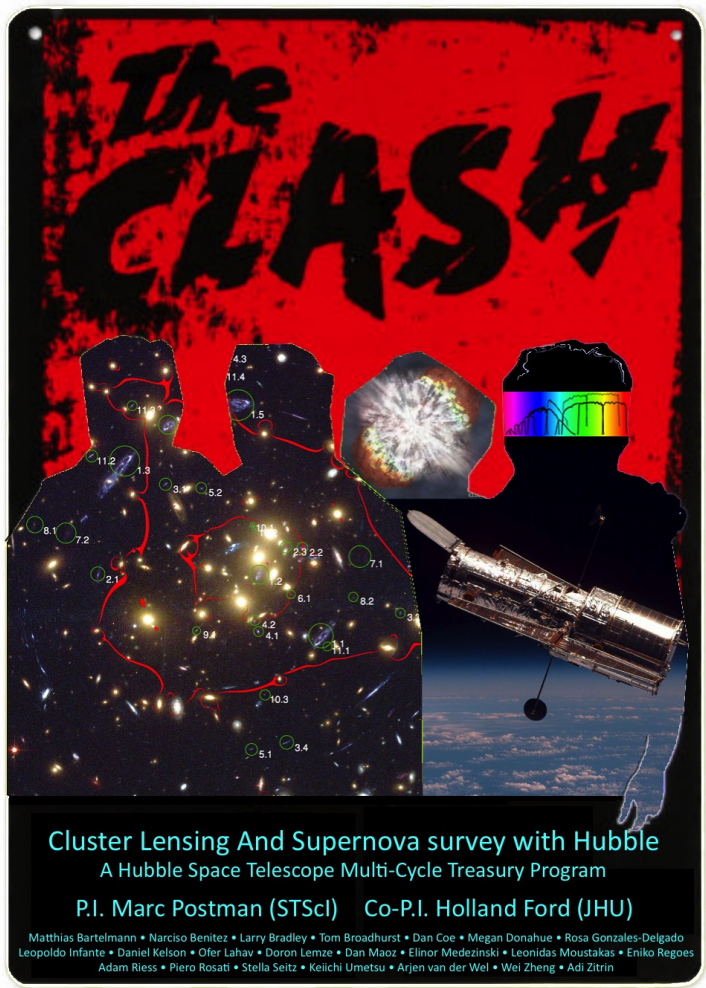
Abell 2744: Issues



- Strong lensing of the NW peak?
- Low resolution in the outskirts
  $\Rightarrow$ SUBARU imaging
- Strong lensing redshifts
  $\Rightarrow$ VLT spectroscopy

CLASH

One of three HST/MCT programmes. Start September 2010 (3 cycles).



Science Drivers

- To map the dark matter in galaxy clusters
- To detect SN out to redshifts $z > 1.5$
- To detect and characterise $z > 7$ galaxies
- To study the galaxies in and behind the clusters

http://www.stsci.edu/~postman/CLASH/

CLASH: Investigators

United States

M. Postman (P.I.) (STScI) | H. Ford (Co-P.I.) (JHU) | L. Bradley (STScI) | D. Coe (STScI)

M. Donahue (Michigan) | G. Graves (UC Berkeley) | D. Kelson (Carnegie) | D. Lemze (JHU)

E. Medezinski (JHU) | L. Moustakas (JPL) | A. Riess (STScI/JHU) | W. Zheng (JHU)

Europe

M. Bartelmann (Heidelberg) | N. Benitez (Granada) | R. Bouwens (Leiden) | T. Broadhurst (Bilbao)

R. Gonzales-Delgado (Granada) | O. Host (London) | S. Jouvel (London) | O. Lahav (London)

R. Lazkoz (Bilbao) | P. Melchior (Heidelberg) | M. Meneghetti (Bologna) | J. Merten (Heidelberg)

E. Regos (CERN) | P. Rosati (ESO) | S. Seitz (Munich)

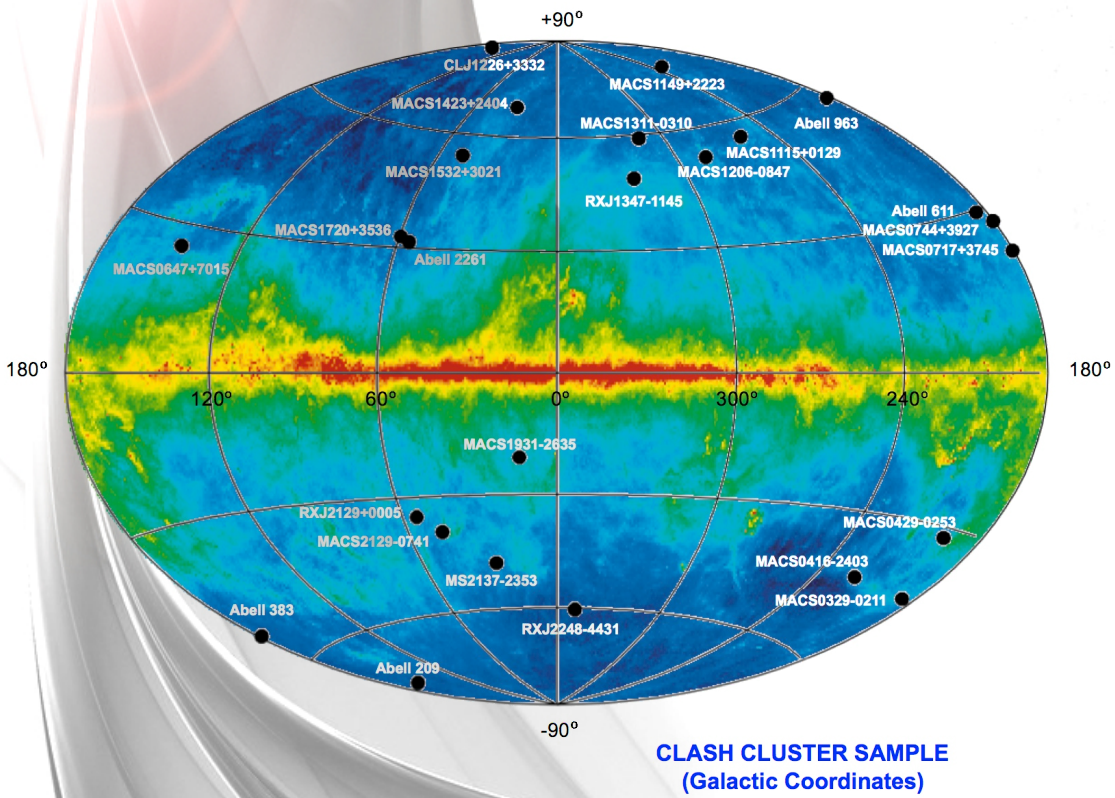
The rest of the world

L. Infante (Santiago de Chile) | D. Maoz (Tel Aviv) | K. Umetsu (Taipei) | A. Zitrin (Tel Aviv)

CLASH: Investigators

Granada, September 20th, 2010

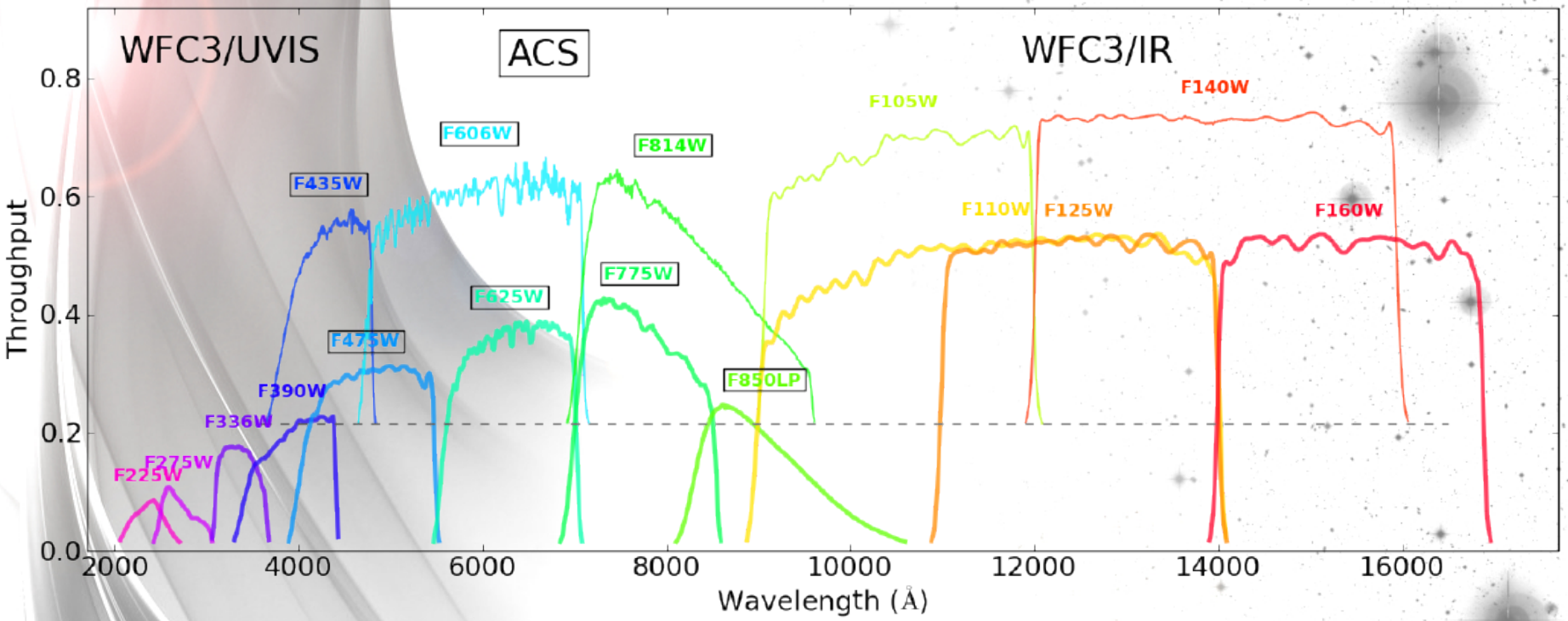
CLASH: Targets



CLASH CLUSTER SAMPLE
(Galactic Coordinates)

- 25 Clusters
- $0.18 < z < 0.9$
- X-ray selected
- relaxed
- Chandra archival data

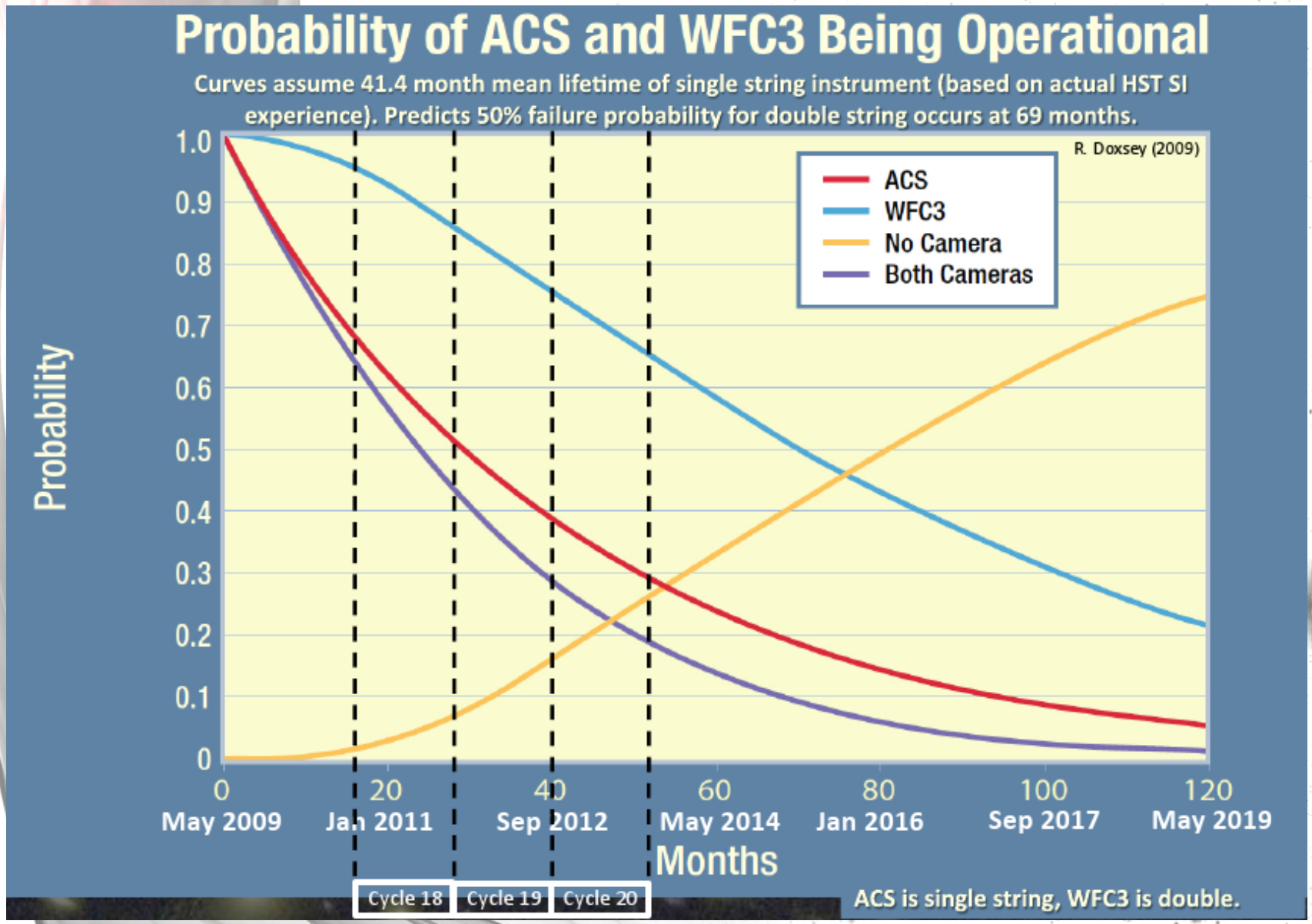
CLASH: HST observations



- ACS/WFC3 in parallel
- 524 orbits
- excellent photo-z determination

- near IR - near UV
- 20 orbits / cluster
- BPZ & LePhare (Hildebrandt10+)

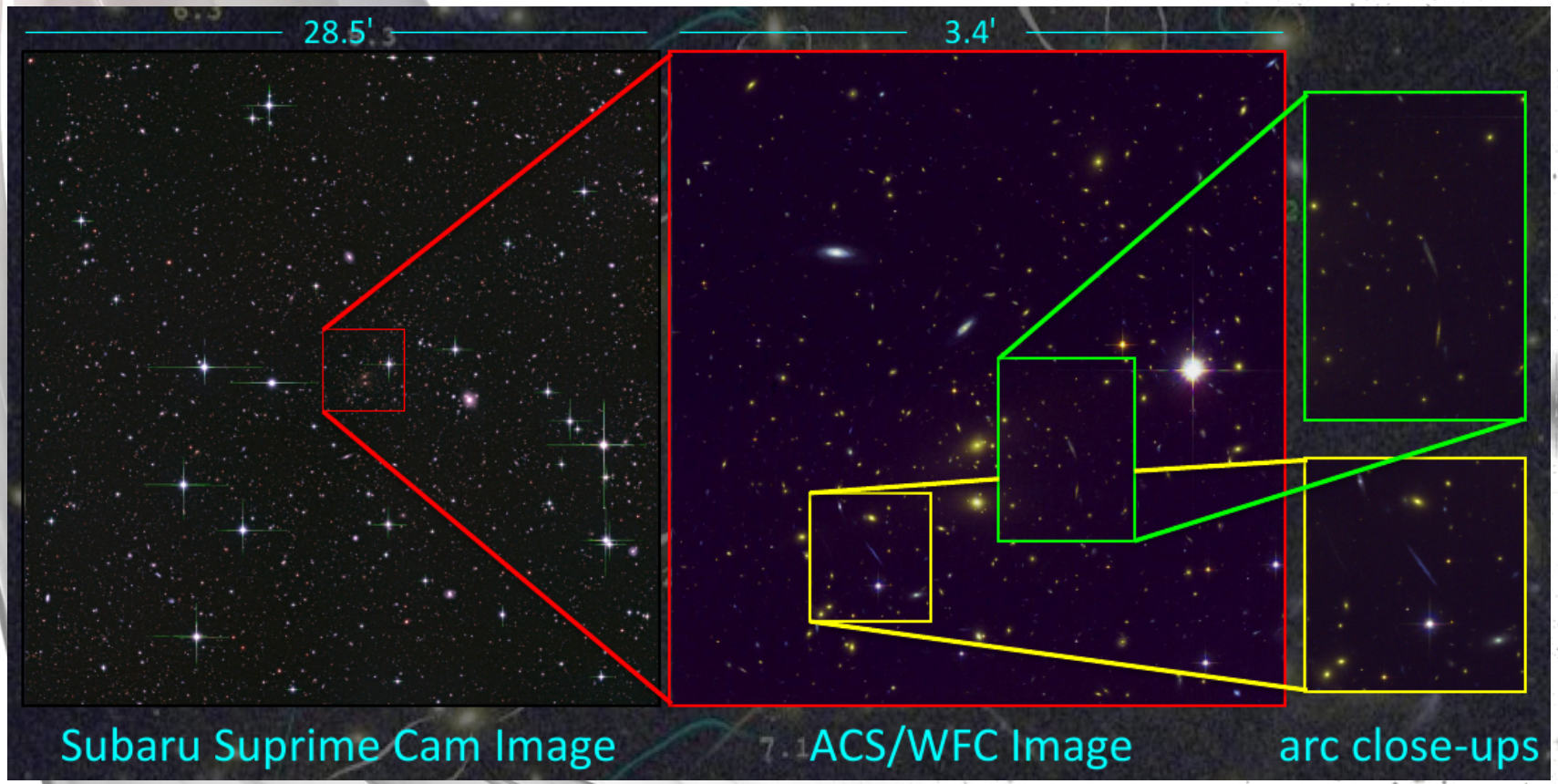
CLASH: HST observations



CLASH: Parallel data

Nice sideremark: Granted Ground-based and CLASH-related observing time exceedes already the HST/MCT programme.

SUBARU BVRIZ weak lensing



CLASH: Parallel data

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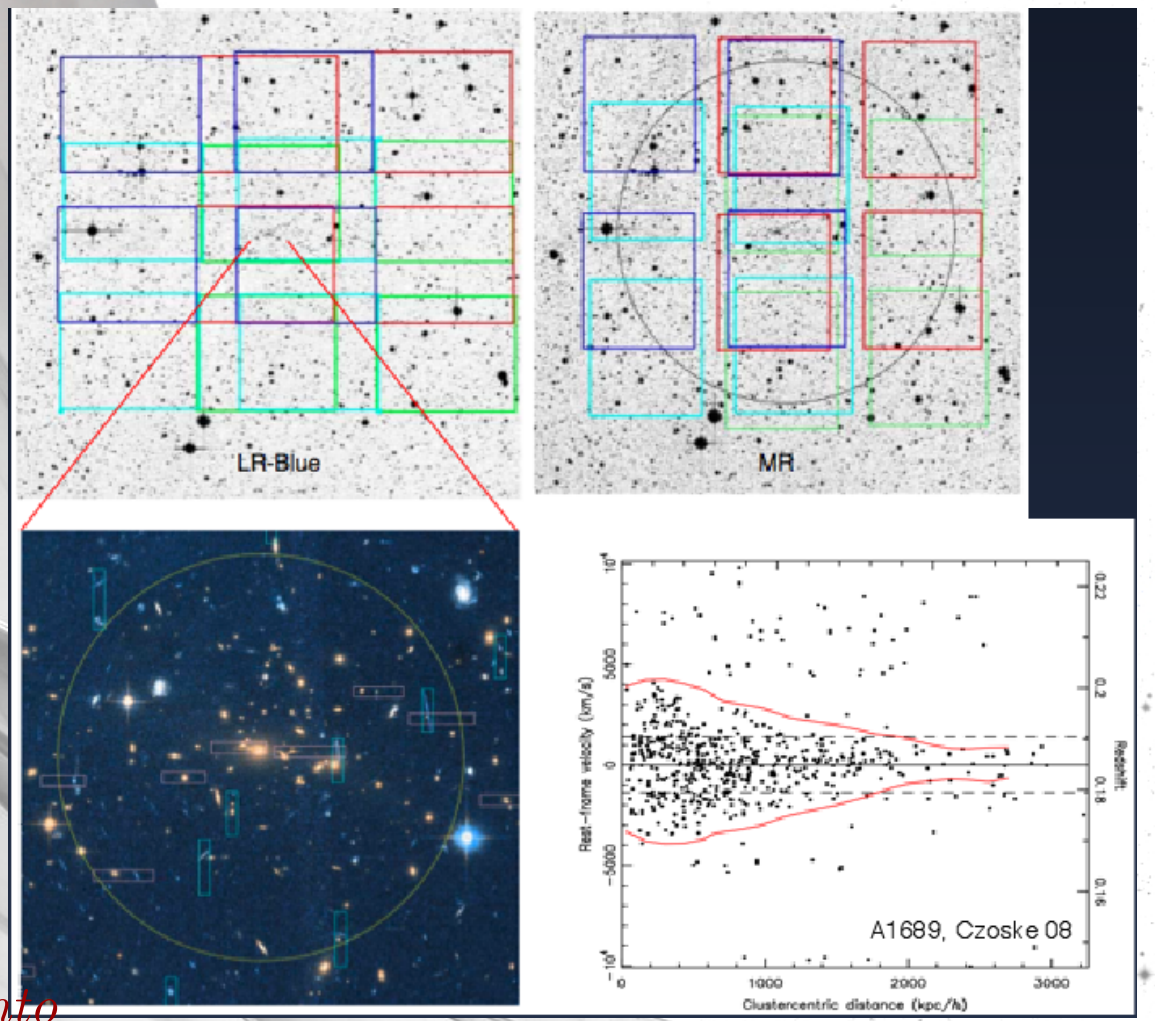
GTC/VLT/Magellan spectroscopy



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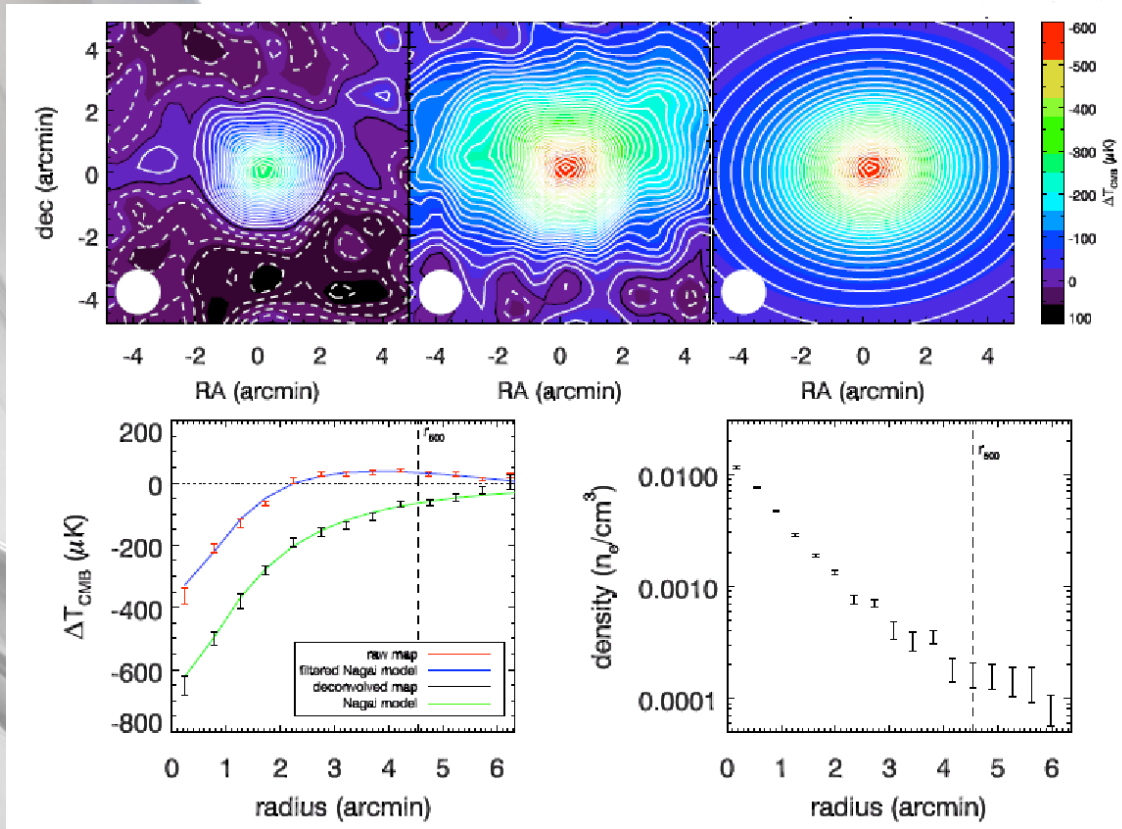
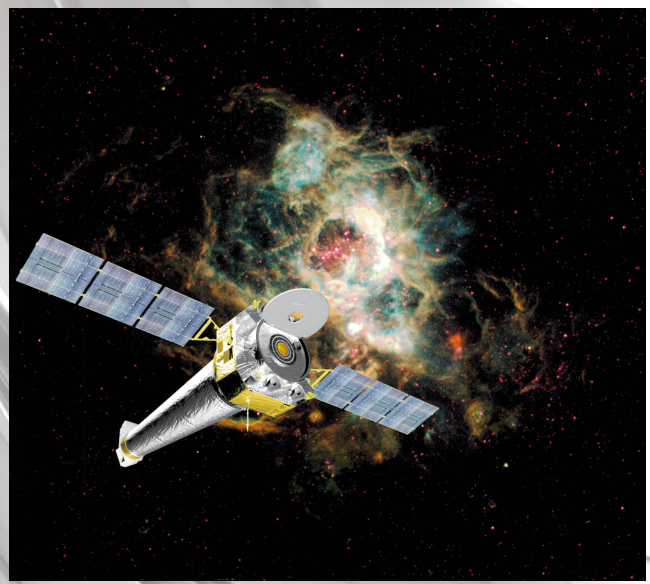
Bolocam/AMiBA/SZA/Mustang SZE observations



CLASH: Parallel data

Nice sideremark: Granted Ground-based and CLASH-related observing time exceedes already the HST/MCT programme.

Chandra/XMM Newton archival data



CLASH in Heidelberg and Bologna

1. Perform realistic, CLASH-like simulations to test and calibrate the methods (Massimo M.)
2. Measure shear and flexion in the HST and SUBARU frames (Peter, Massimo V.)
3. Reconstruct the mass profiles with a joint method
4. Make this all run on your PlayStation
5. Do cosmology with this (Matthias...“and his team”)