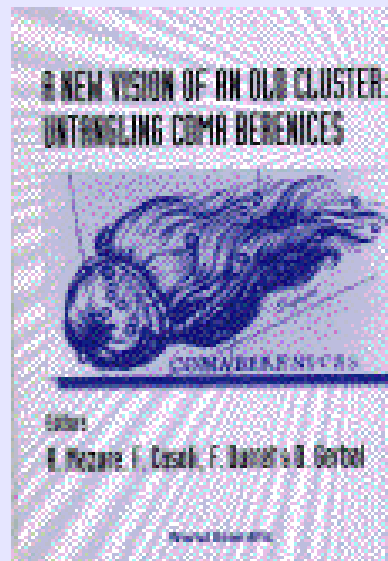


# A “*brand*” new vision of an old cluster: untangling Coma Berenices



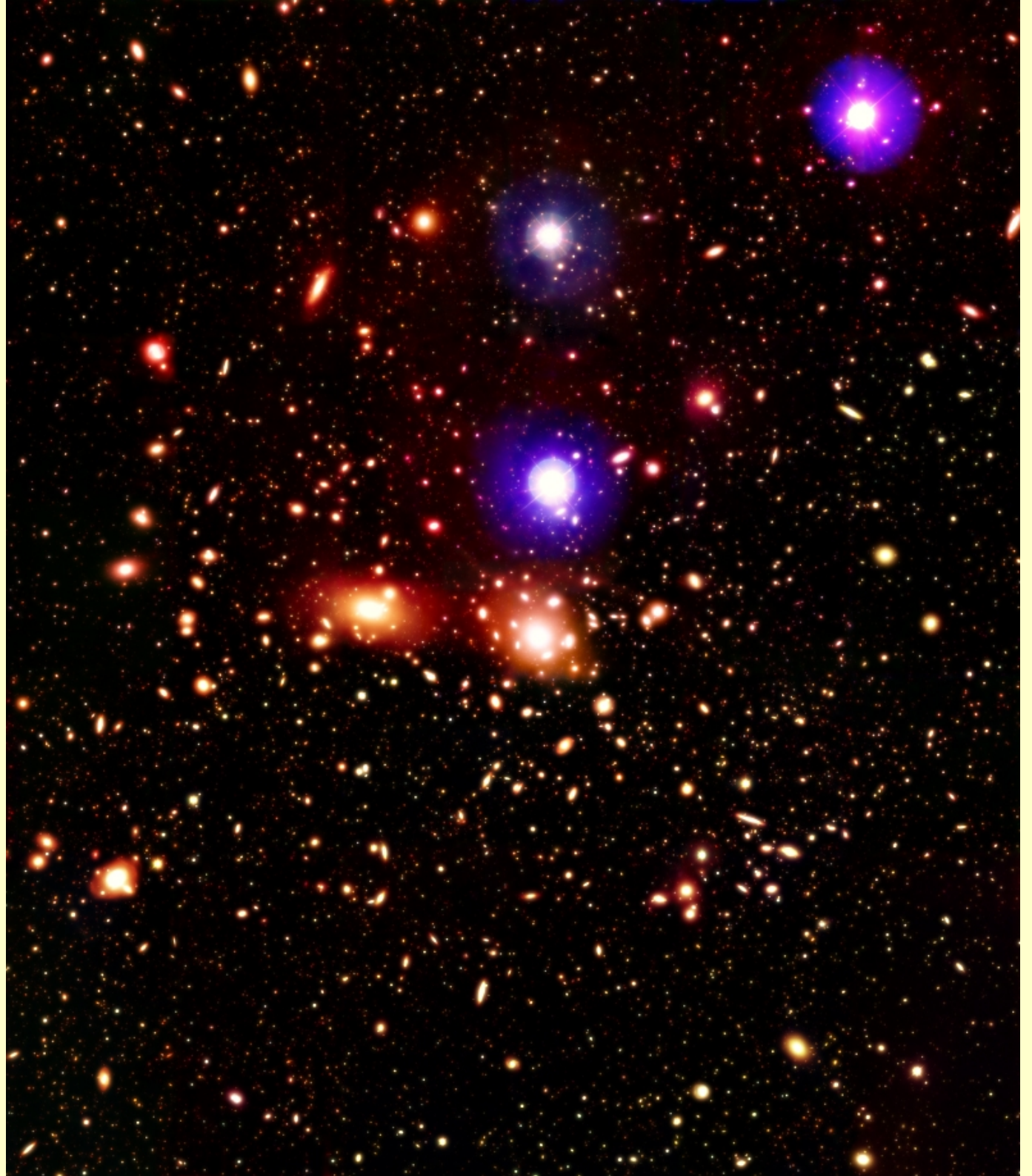
A new vision of an old cluster: untangling  
Coma Berenices,  
Marseille conference, 1997  
Mazure, Casoli, Durret, Gerbal

ADAMI Christophe (LAM/OAMP, Marseille, France) et al.

Based on: Adami et al., 1998, A&A 334, 765; Adami et al., 2000, A&A 353, 930; Adami et al., 2005, A&A 429, 39; Adami et al., 2005, A&A 443, 17; Adami et al., 2006, A&A 451, 1159; Adami et al., 2006, A&A 459, 679; Adami et al., 2007, A&A 462, 411; Adami et al., 2007, A&A 472, 749; Adami et al., 2008, A&A 491, 681; Adami et al., 2009, A&A 493, 399; Adami et al., 2009, A&A 495, 407; Gavazzi et al., 2009, A&A 498, L33; Adami et al., 2009, A&A 509, 81

- Precursor in many fields (e.g. Zwicky and Dark Matter)
- One of the first clusters to have been systematically catalogued (Godwin et al.)
- A privileged target in Marseille
  - First spectroscopic catalog at  $R \sim 21$  (tidal dwarf regime) in 1998 (CFHT MOS)
  - Full optical coverage (U  $\rightarrow$  I) of the cluster densest parts ( $\sim 1 \text{ deg}^2$ ) down to the globular cluster regime (CFHT CFH12K and Megacam)
  - Largest and deepest spectroscopic sample for a cluster in 2009, down to  $M_R \sim -13$  (VLT VIMOS)

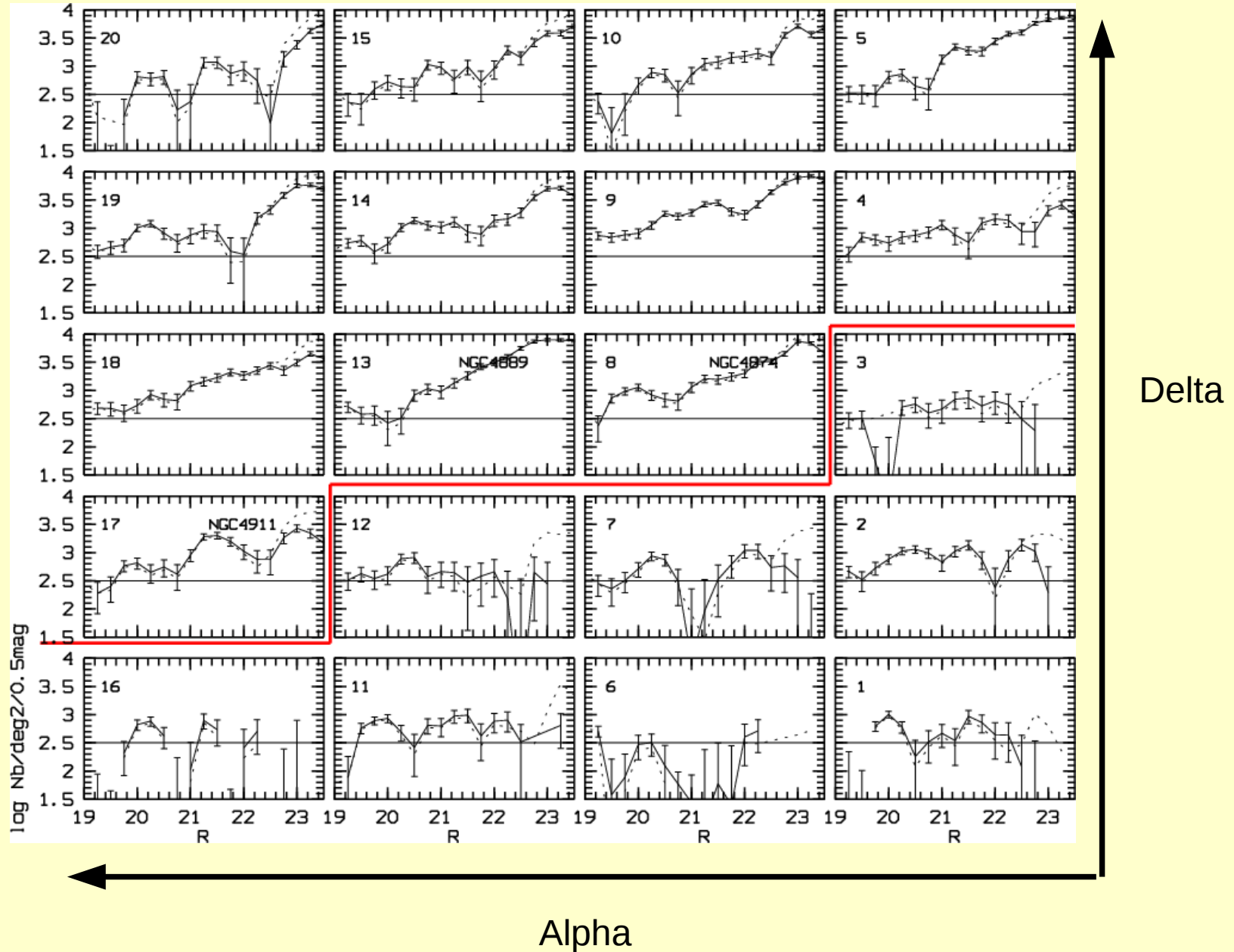
Coma: BVR



# Luminosity functions

- Triple approach: background statistical subtraction, photometric redshifts, spectroscopic redshifts
  - VVDS empty fields
  - One of the first luminosity functions based on photometric redshifts
  - One of the first luminosity functions in the Dwarf regime via spectroscopic redshifts
  
- Consistent results!

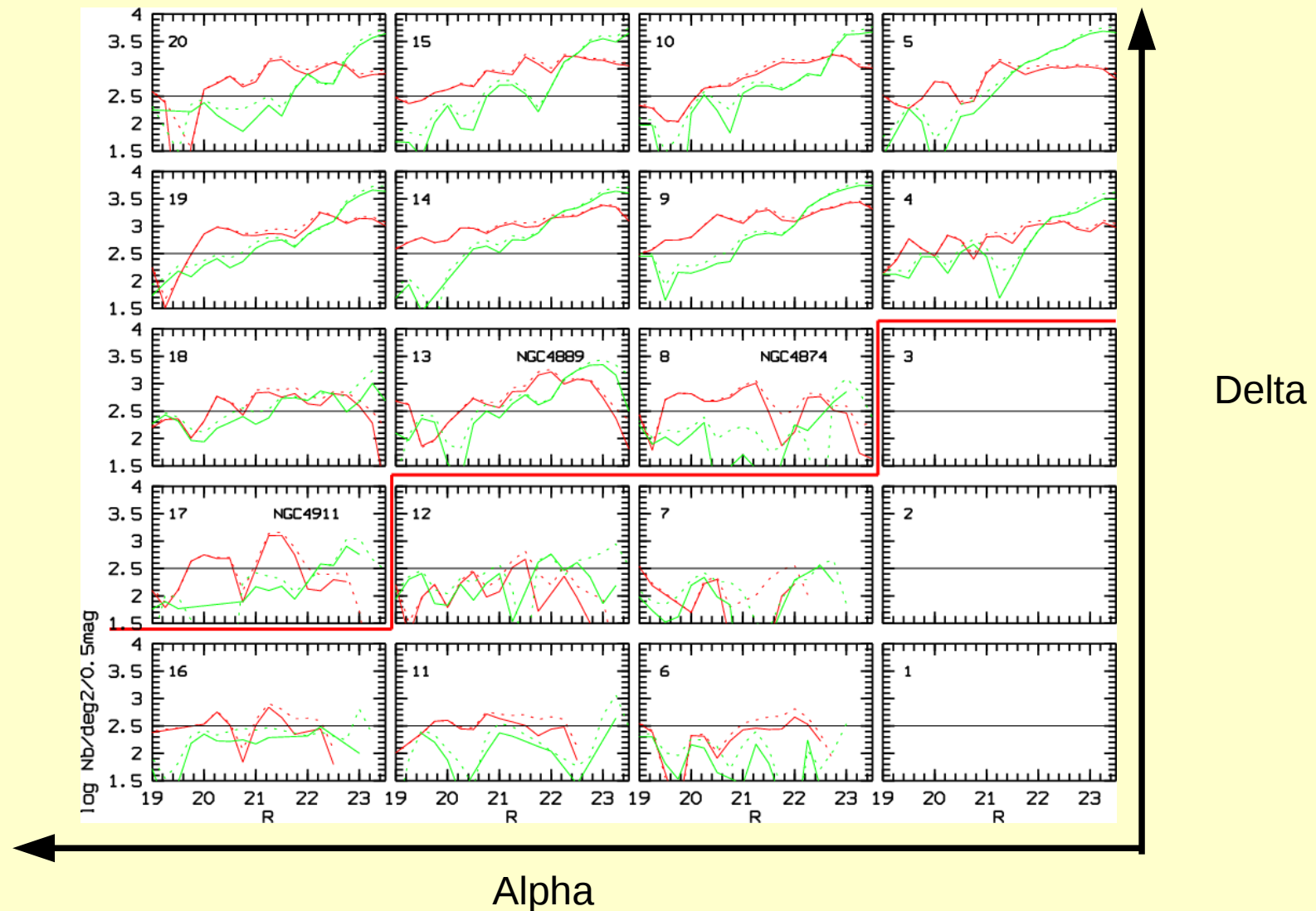
- Isotropic approaches are meaningless to compute luminosity functions





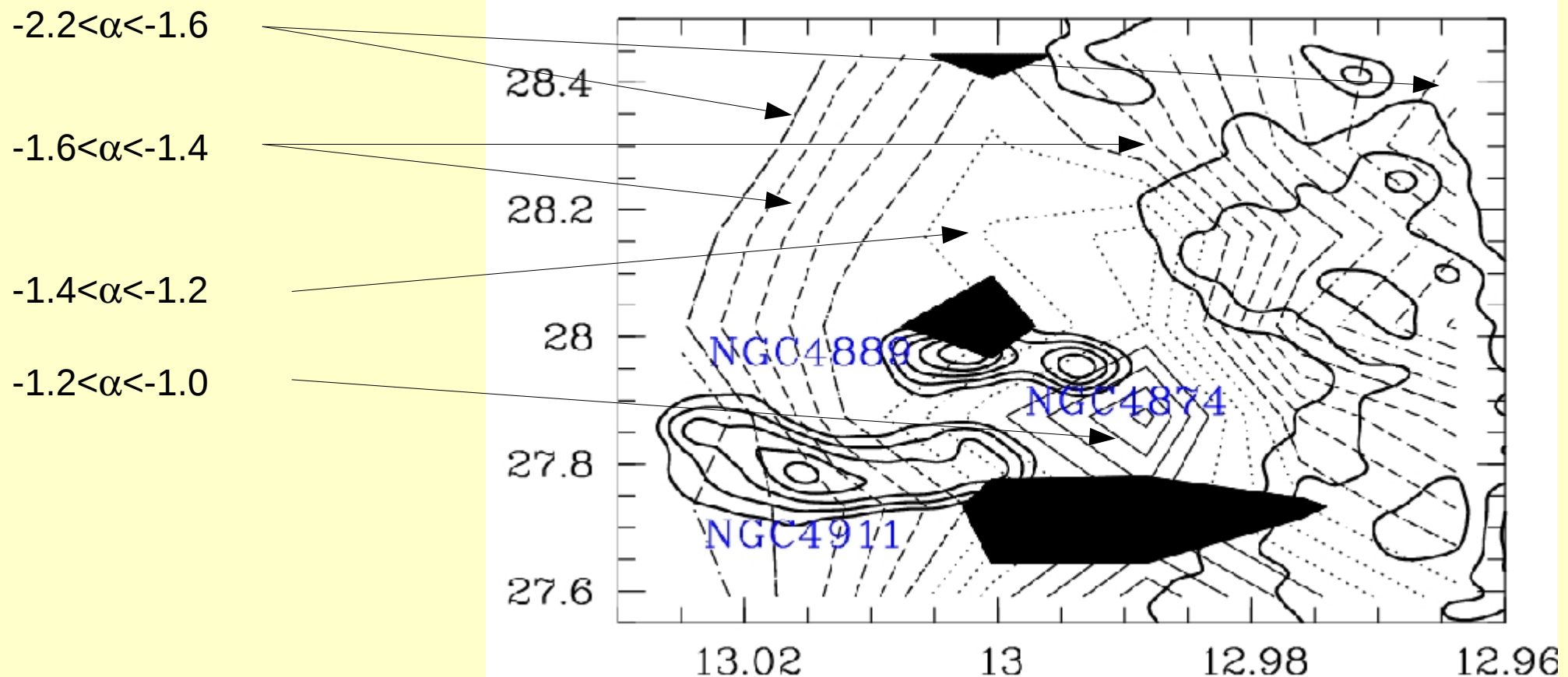
# Different magnitudes: different populations...

- Blue objects significantly contribute to the dwarf regime



# Galaxies « burning » to join Coma!

- Slope of the  $u^*$  band luminosity function: UV excess at the cluster periphery



# History of the Coma galaxies

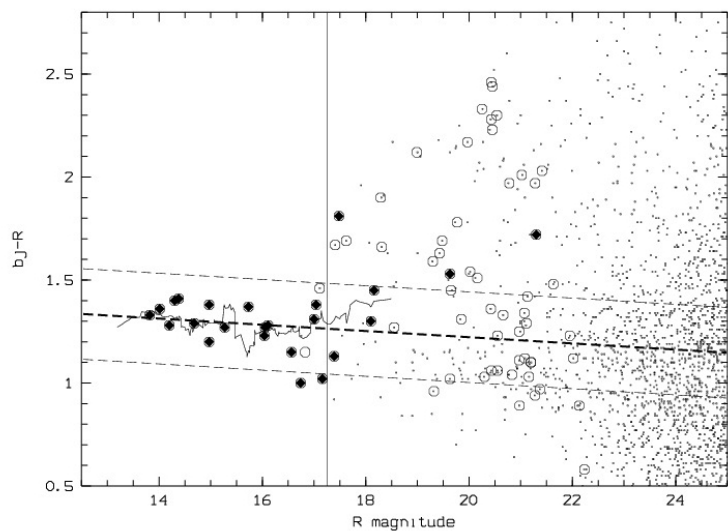
- Red sequence over the whole cluster magnitude range: Dwarves have a qualitatively similar history compared to Giants, but quantitatively more disturbed

Absorption line galaxies at  $z > 0.2$

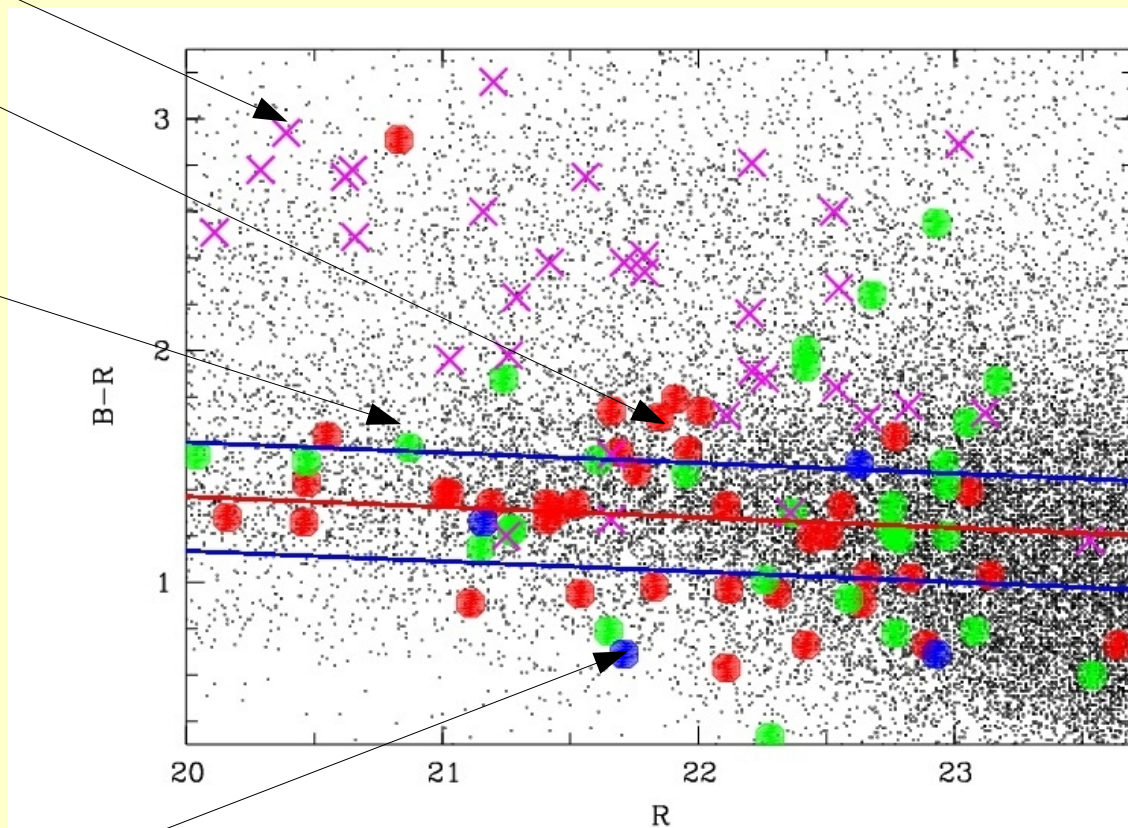
Coma absorption line galaxies

Coma absorption+emission line galaxies

1998



2009

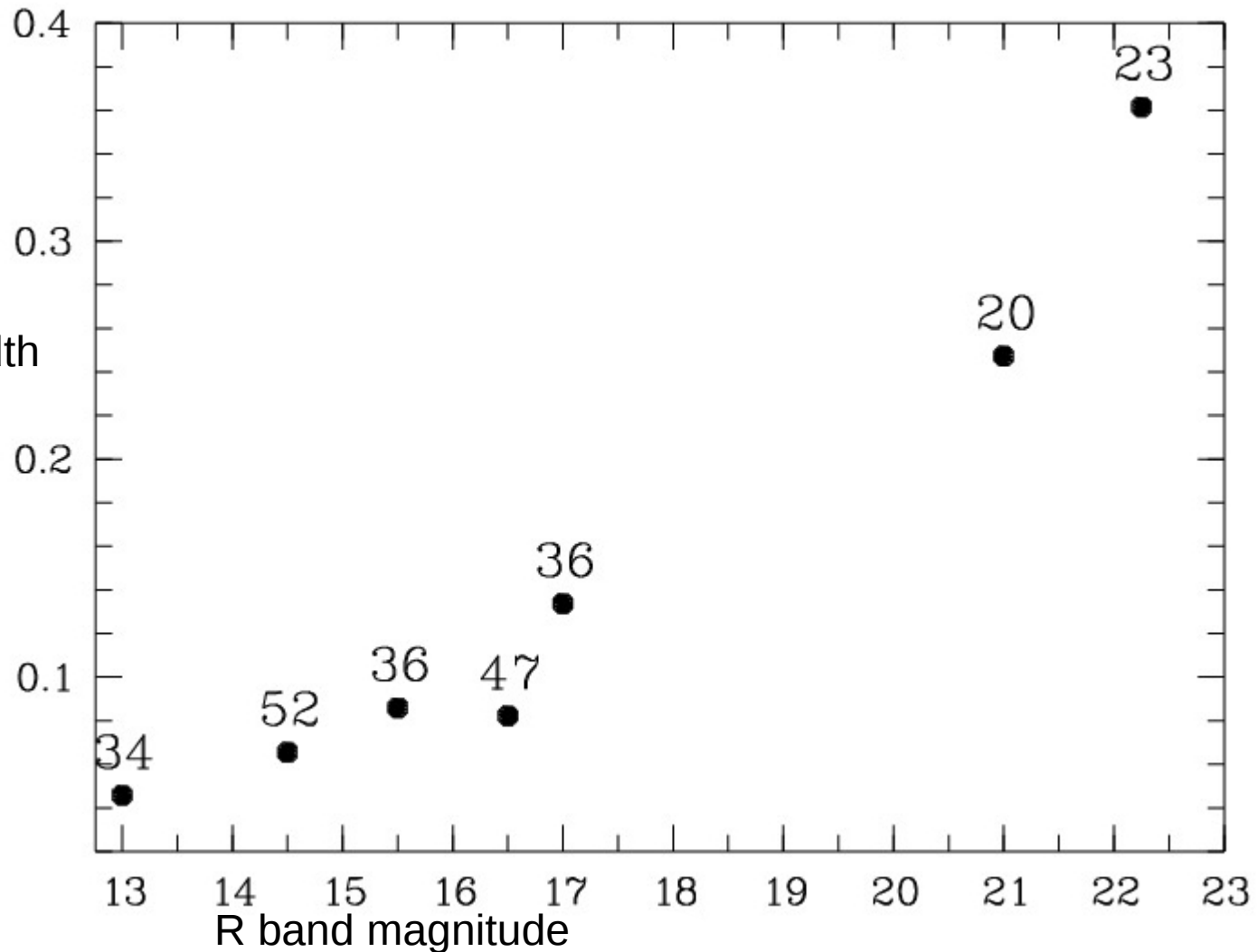


Coma pure emission line galaxies



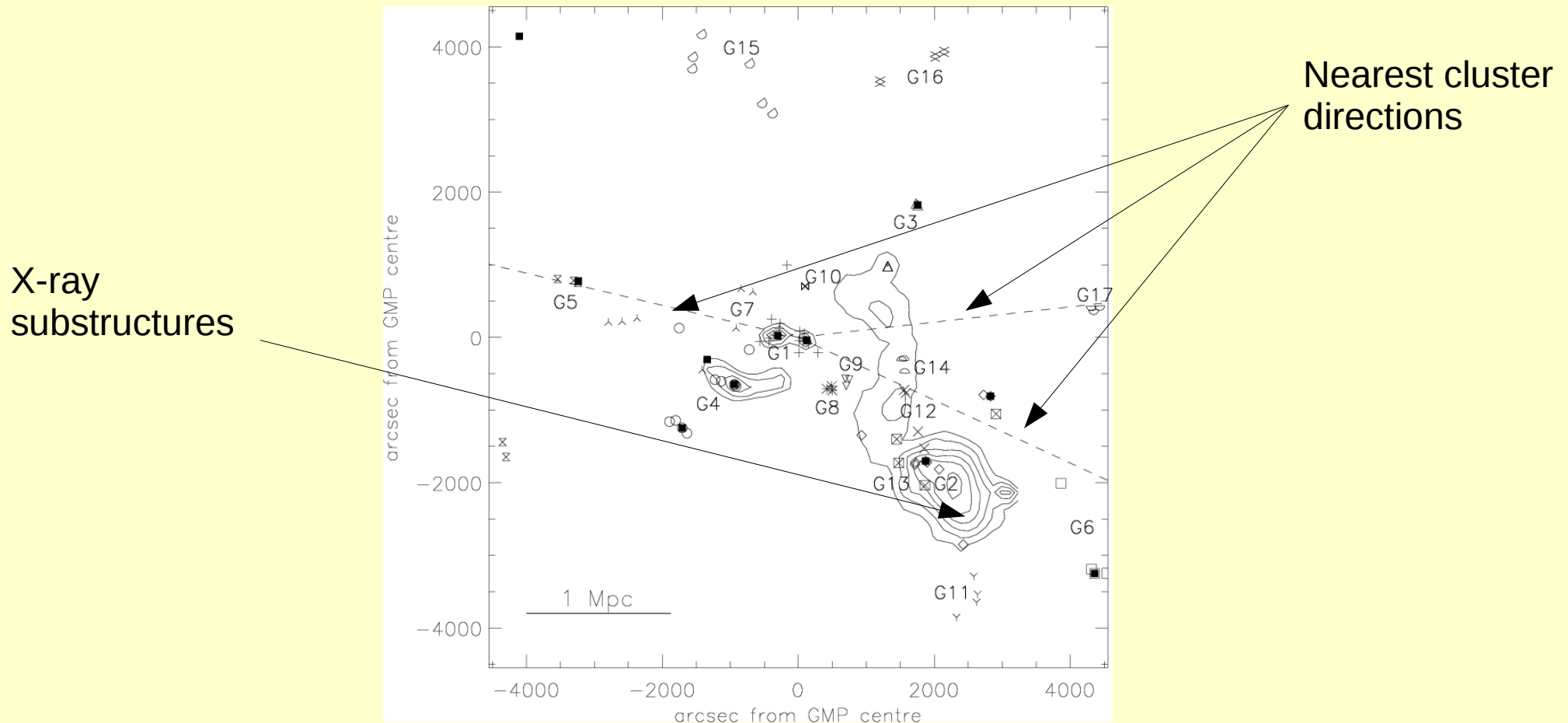
- Formation epoch regulates the mass and then the metal content?
- Production of various size/mass debris?

Red sequence width  
(in magnitudes)



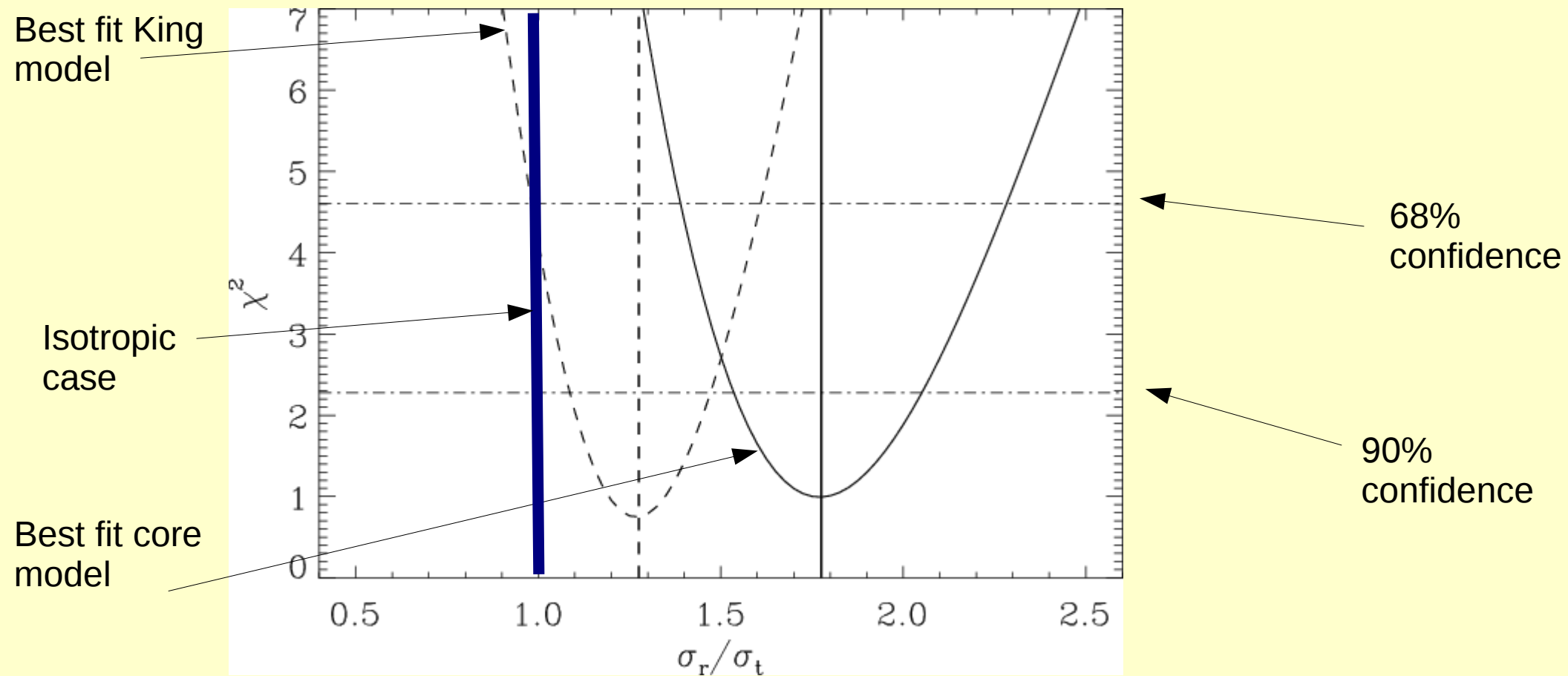
# The Coma cluster formation

- Search for infalling groups / Substructures: **all the Coma cluster mass can originate from accreted groups**: major aspect of the Coma mass growth



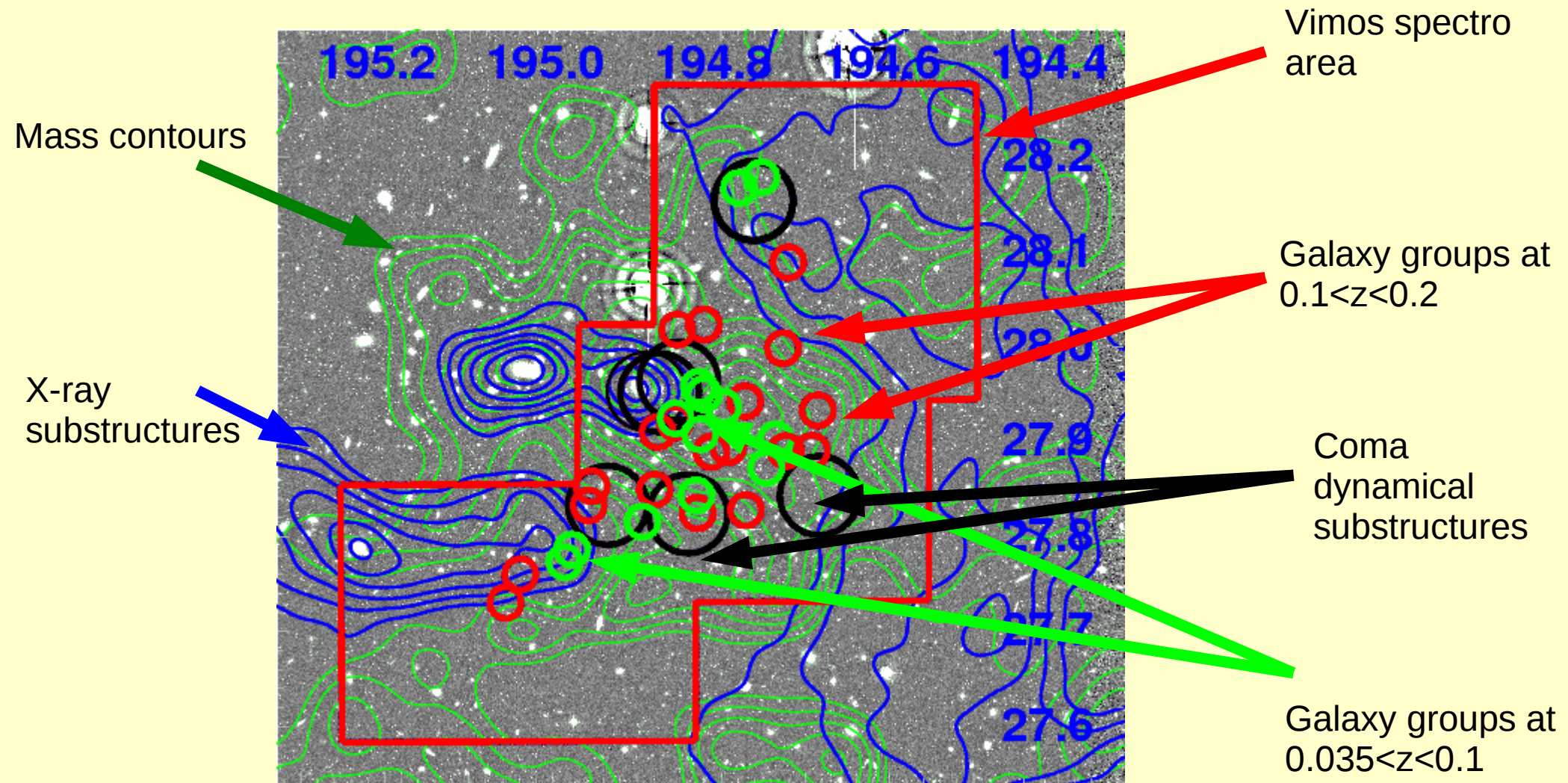
# Dwarf galaxies

- Dwarf old stellar population galaxies have radial and anisotropic orbits
- Different behaviour compared to giant Ellipticals



# Coma in its web

- Detection of a new filament linking Coma to the SDSS great wall



1933 - ~1997: Coma is the  
archetype of the relaxed cluster

1997-2011 period draw a very  
different Coma picture!



Rendez-vous in 2025 to see if something in this talk is still valid!



C. Adami in 2025

PhD student