

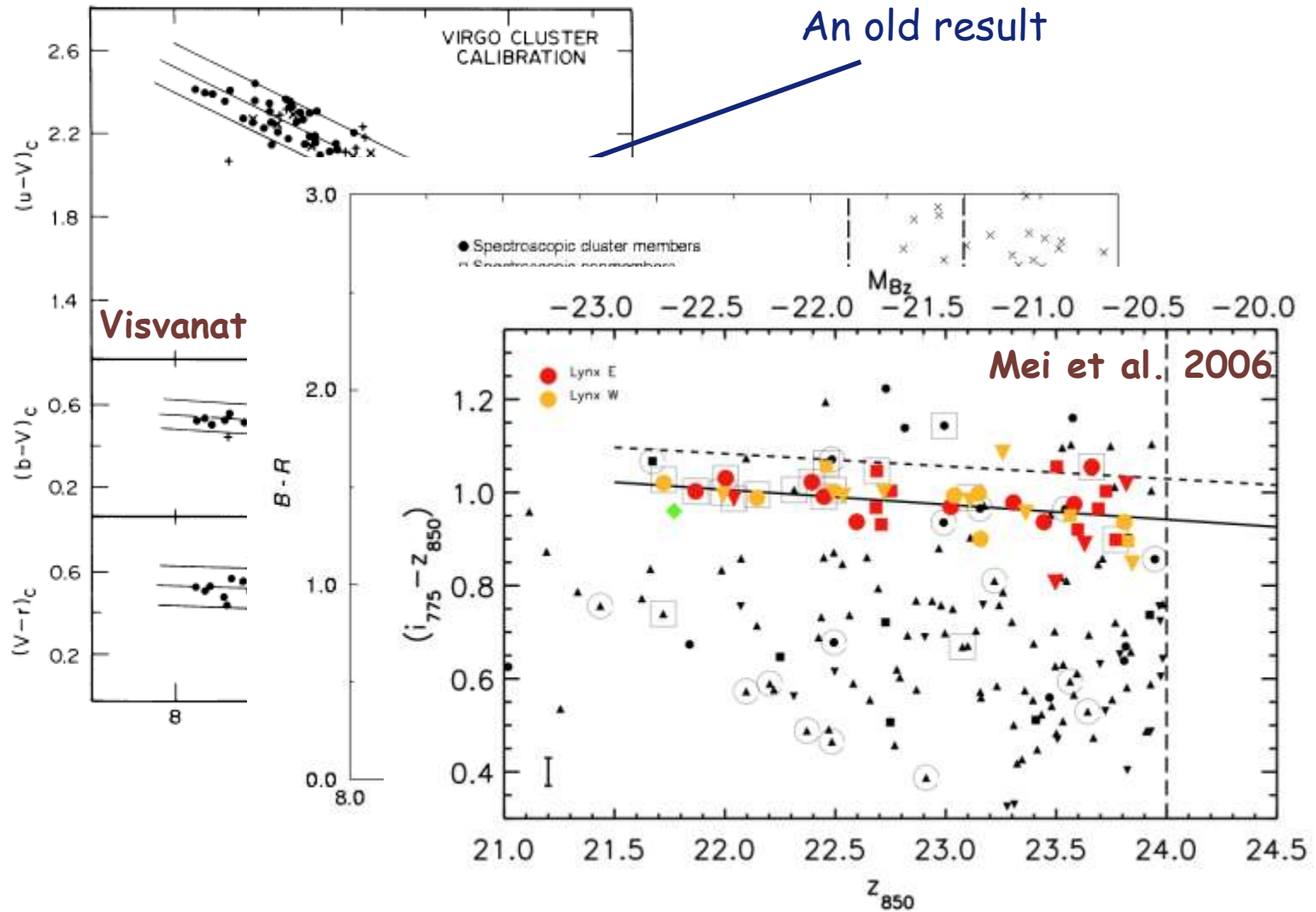


The emergence of the red-sequence

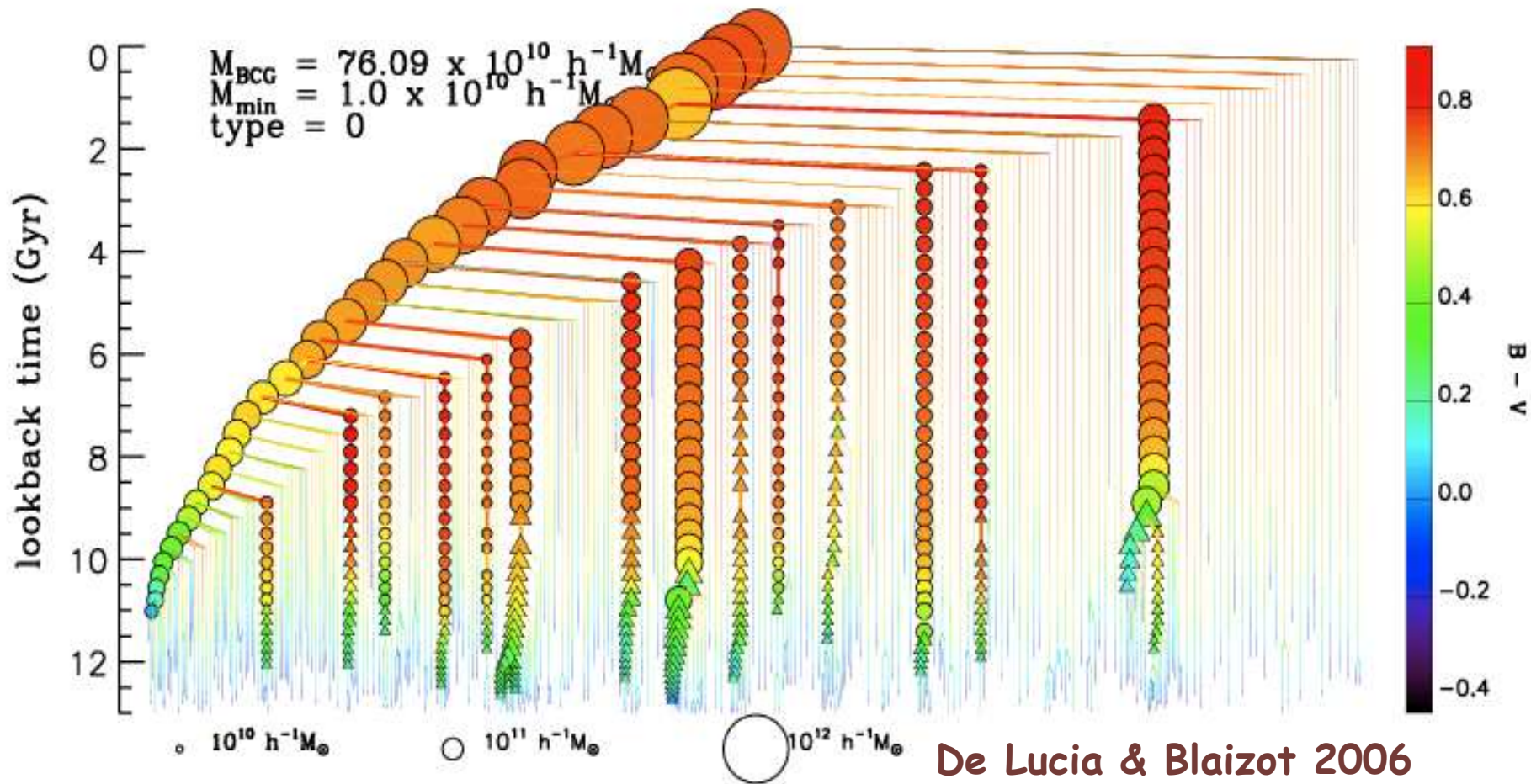
Gabriella De Lucia

Max-Planck Institut für Astrophysik

The CMR - some facts



The CMR - the conjectures #1

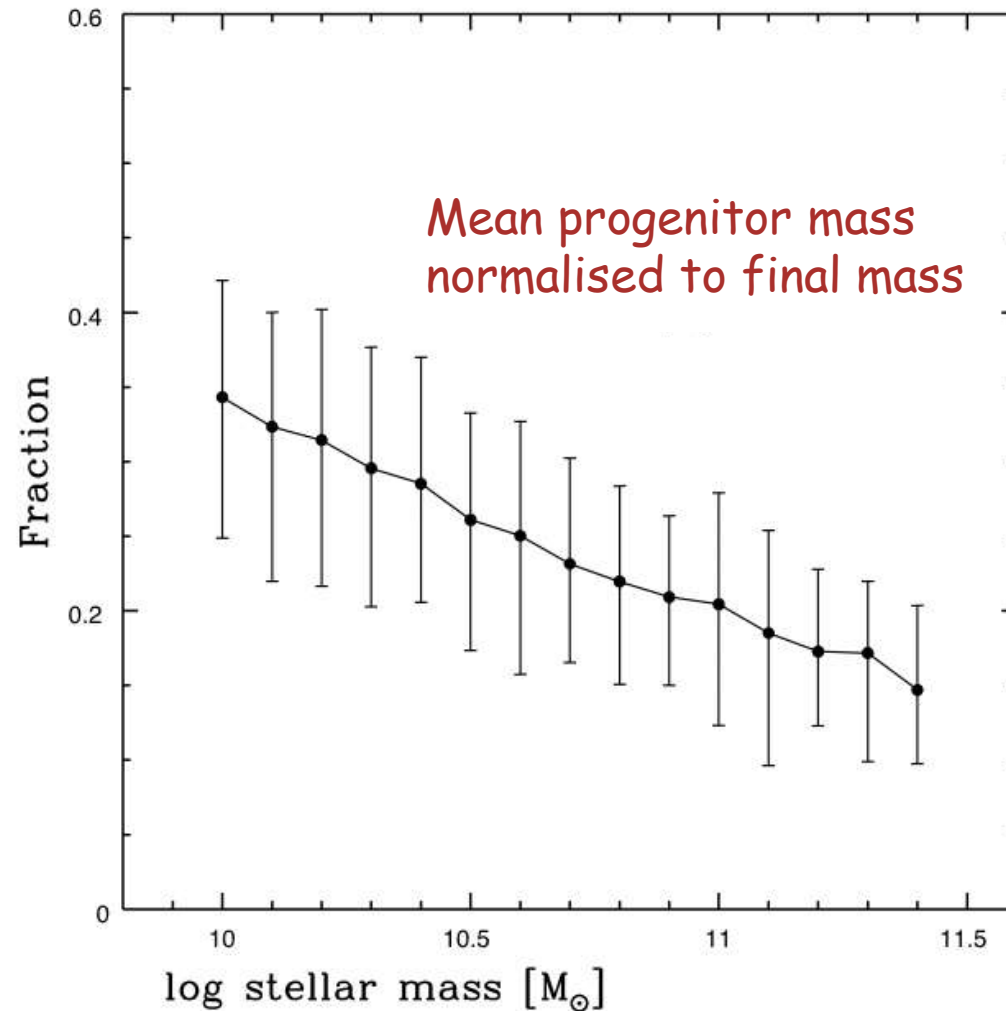


The CMR - the conjectures #2

☞ A hierarchy

→ slope arises from
mergers (Kauffman)

→ a tight CMR
against hierarchical



A truncation in the CMR in high redshift clusters?

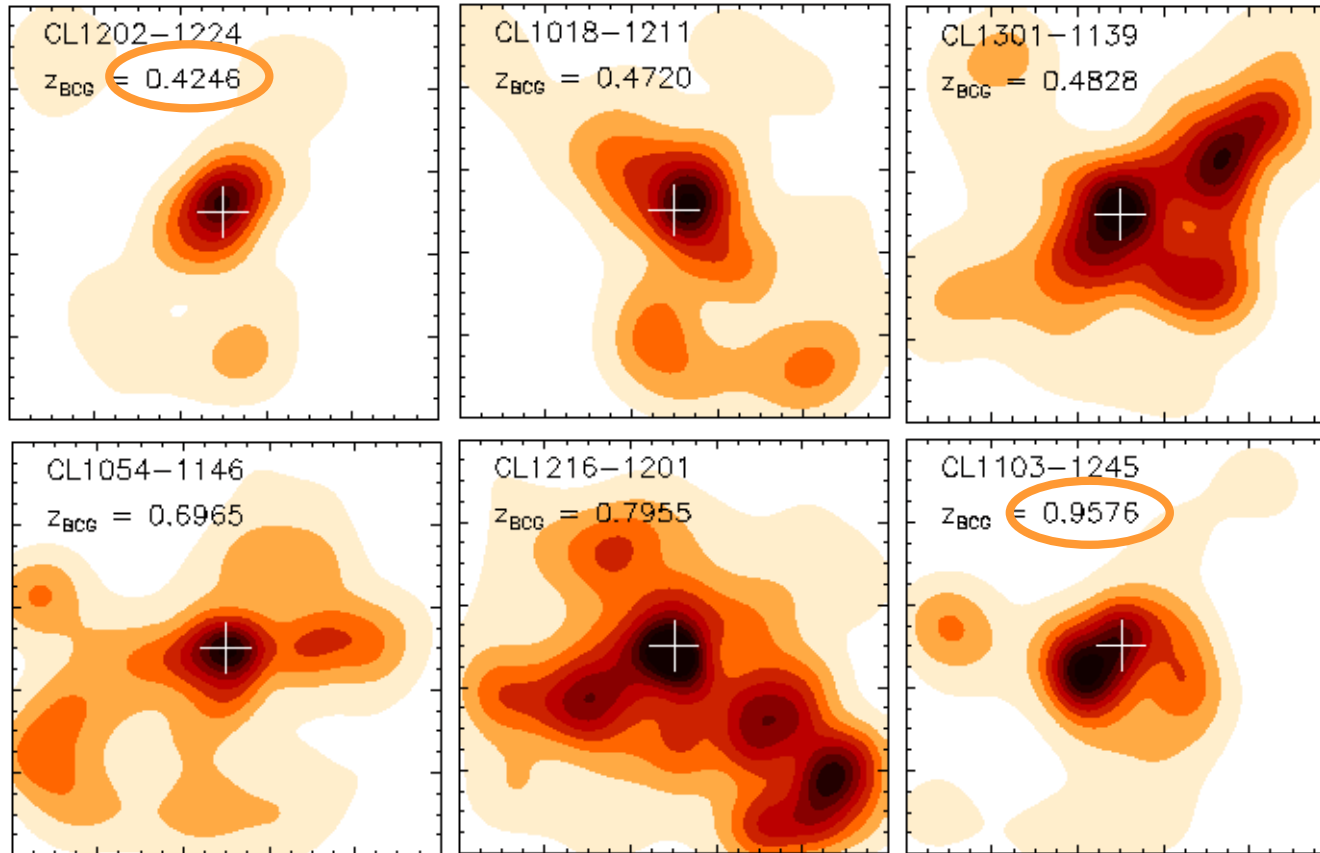


The Eso Distant Cluster Survey

A detailed follow-up of 20 clusters from LCDCS (Gonzalez et al. 2001)
10 clusters at $z \sim 0.5$ and 10 clusters at $z \sim 0.8$

- ⌘ deep optical photometry from VLT (14 nights)
Completed - White et al. 2005
- ⌘ near-IR photometry from NTT (20 nights)
Completed - Aragon-Salamanca et al. in preparation
- ⌘ multi-object spectroscopy with FORS2 on VLT (25 nights)
Completed - Halliday+ 2006; Milvang-Jensen+ in prep
- ⌘ 80 orbits of HST to image 10 high- z clusters!!!
Completed - Desai et al. in preparation
- ⌘ WFI R (120m), V, I (60m)
Completed

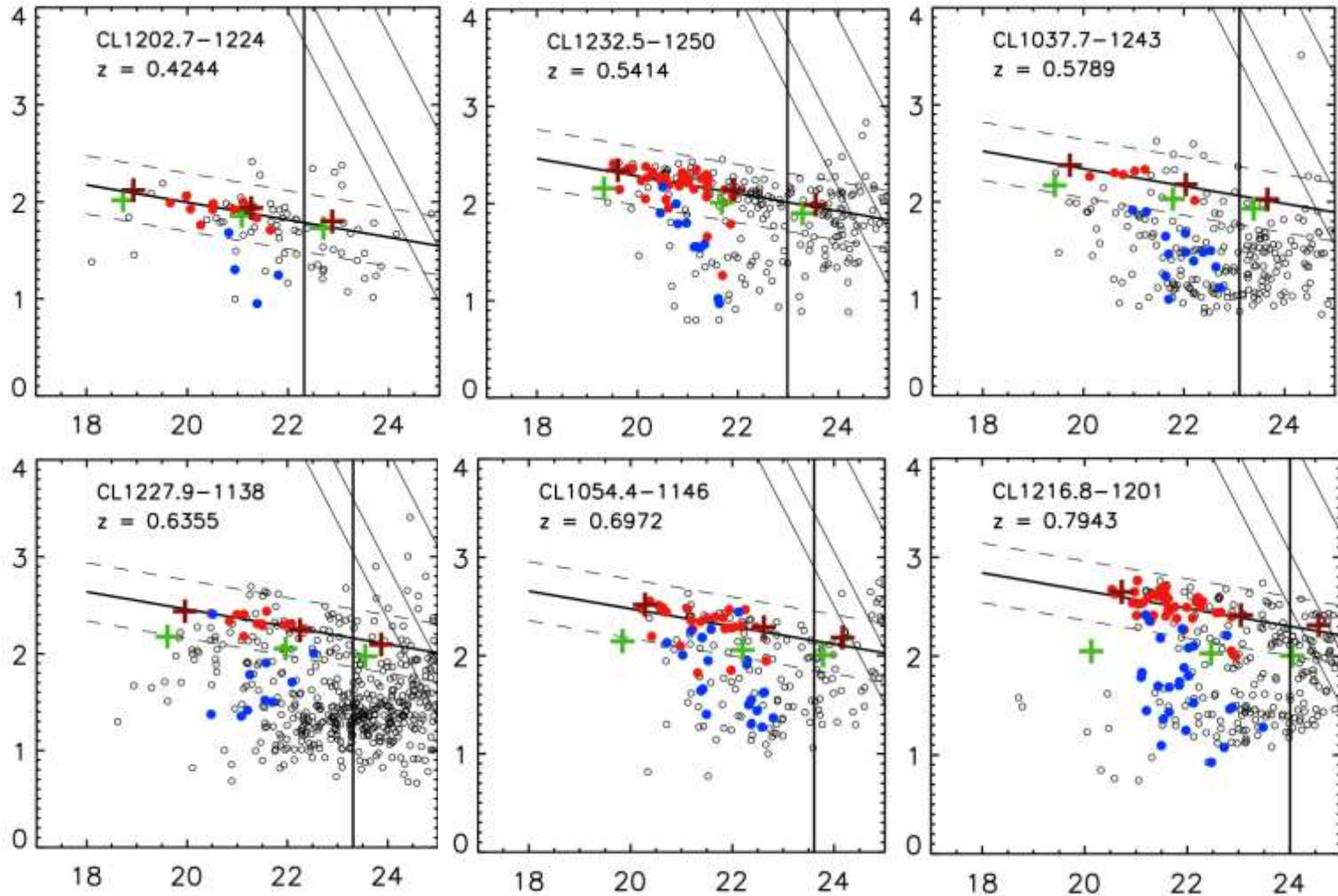
Some EDisCS clusters



White et al. 2005

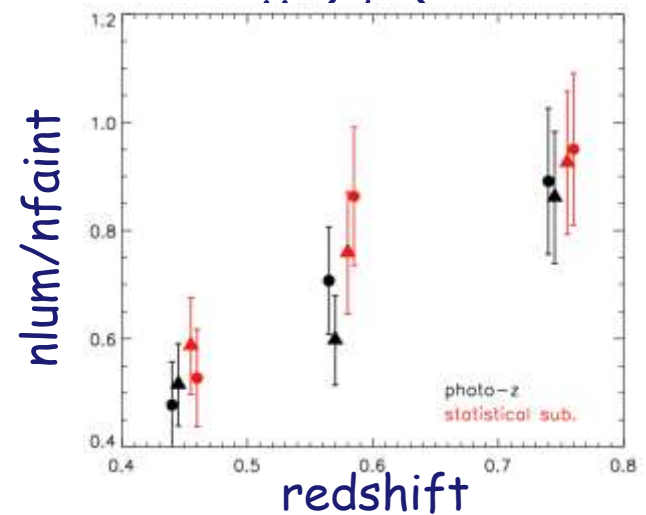
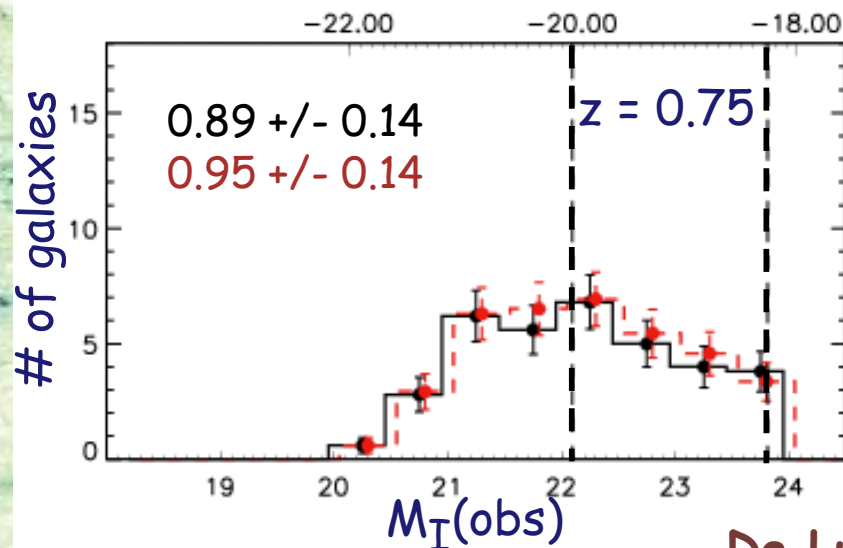
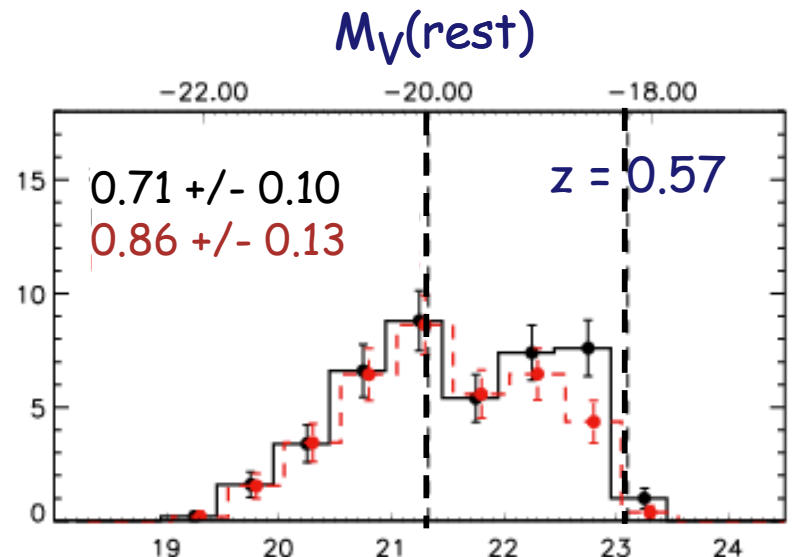
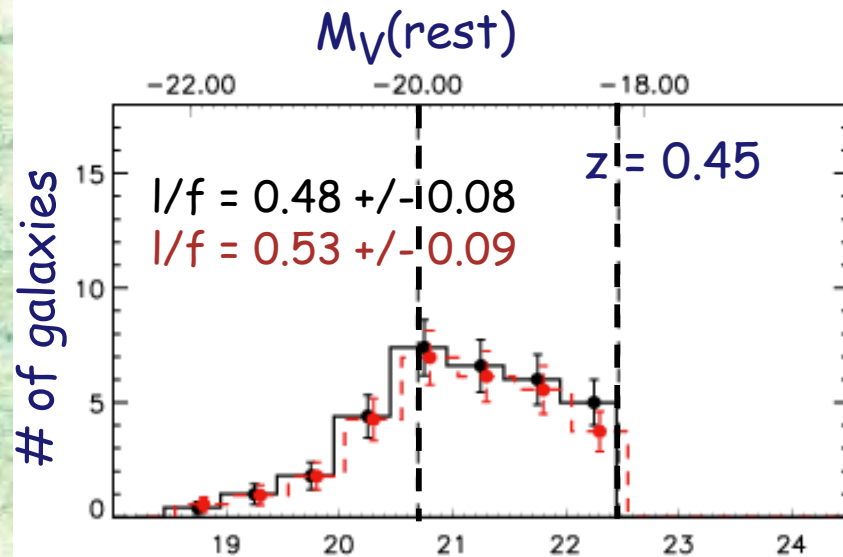
A wide range of masses and structural properties

Some EDisCS CMRs



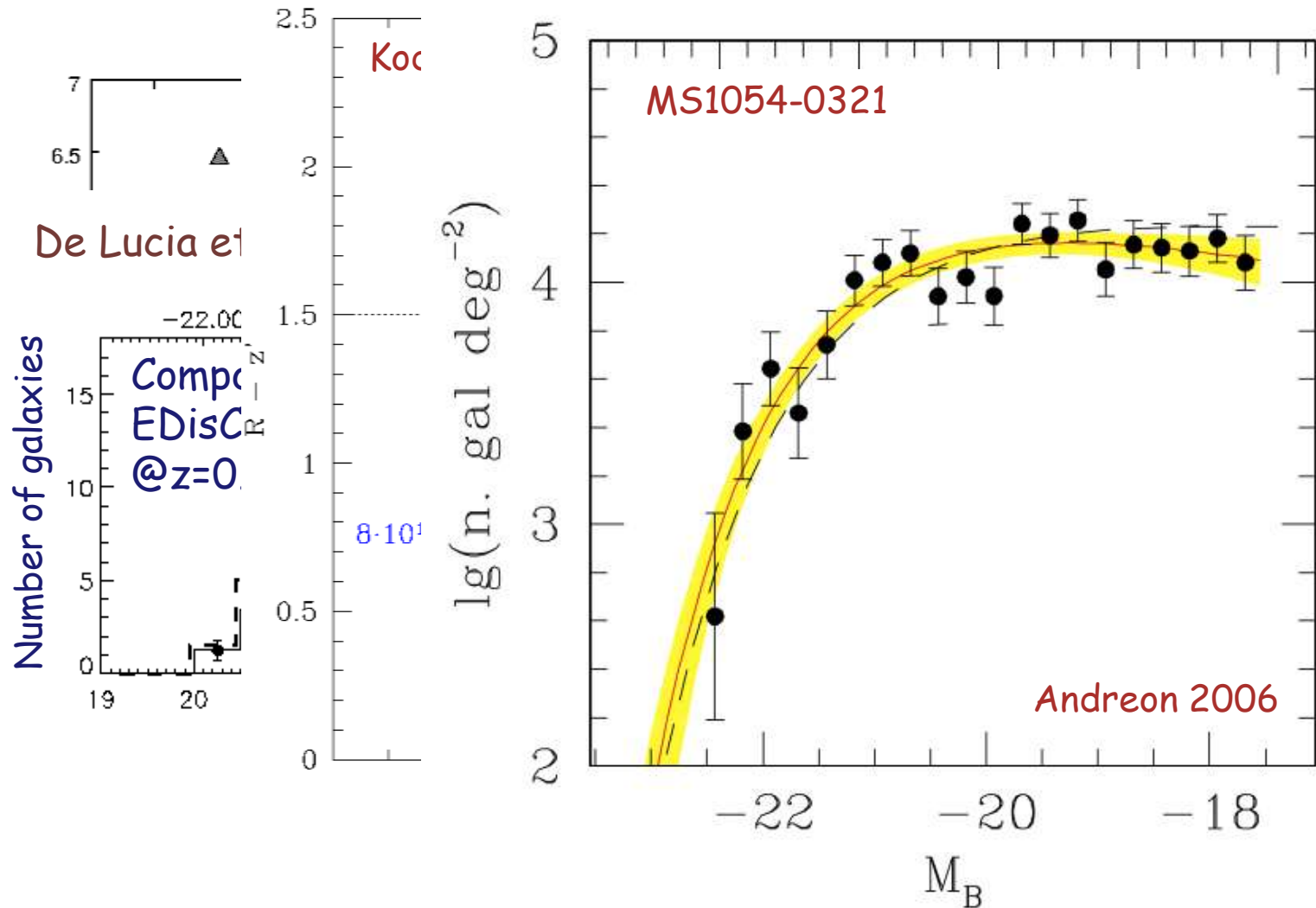
De Lucia et al. 2006, [astro-ph/0610373](https://arxiv.org/abs/astro-ph/0610373)

The build-up of the CMR #1

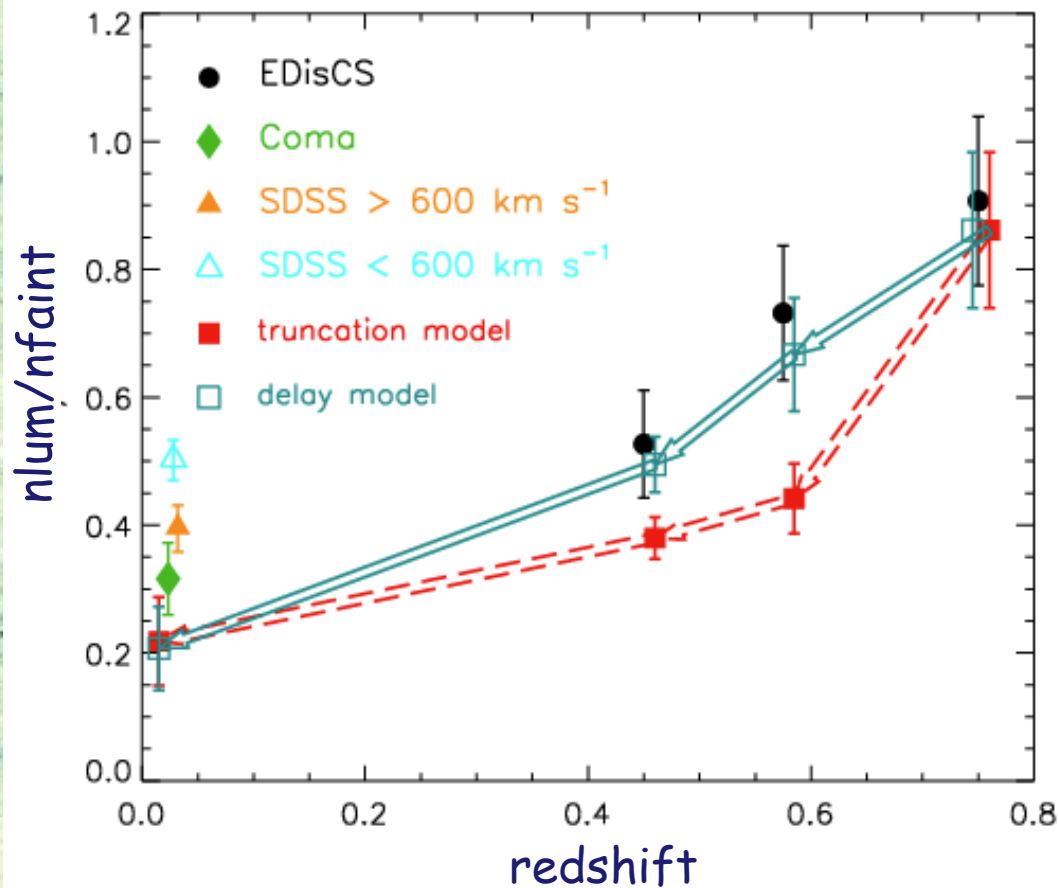


De Lucia et al. 2006, astro-ph/0610373

A controversial result



The build-up of the CMR #2

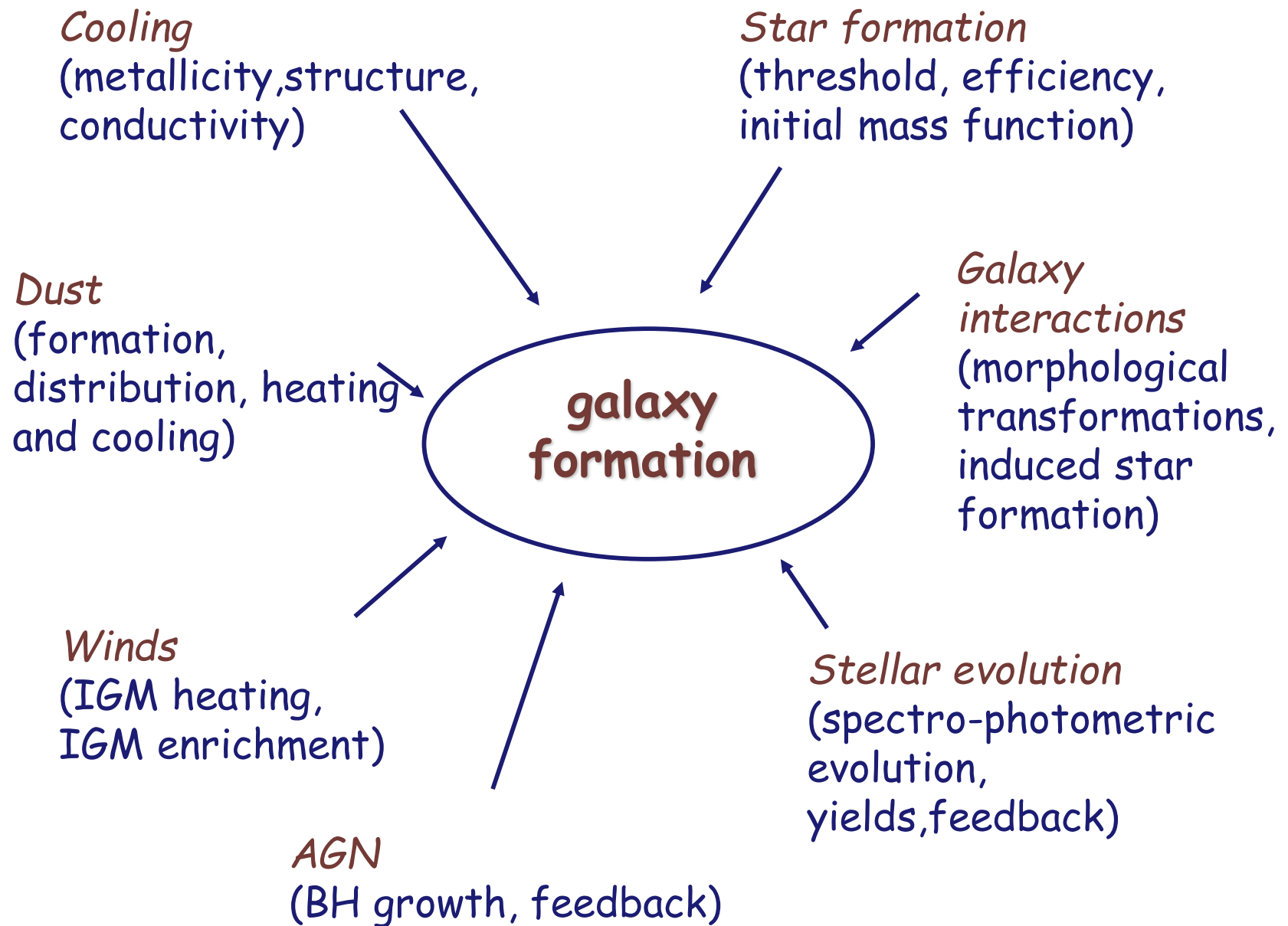


the blue galaxies observed in distant galaxy clusters provide the logical progenitors of faint red galaxies at $z=0$

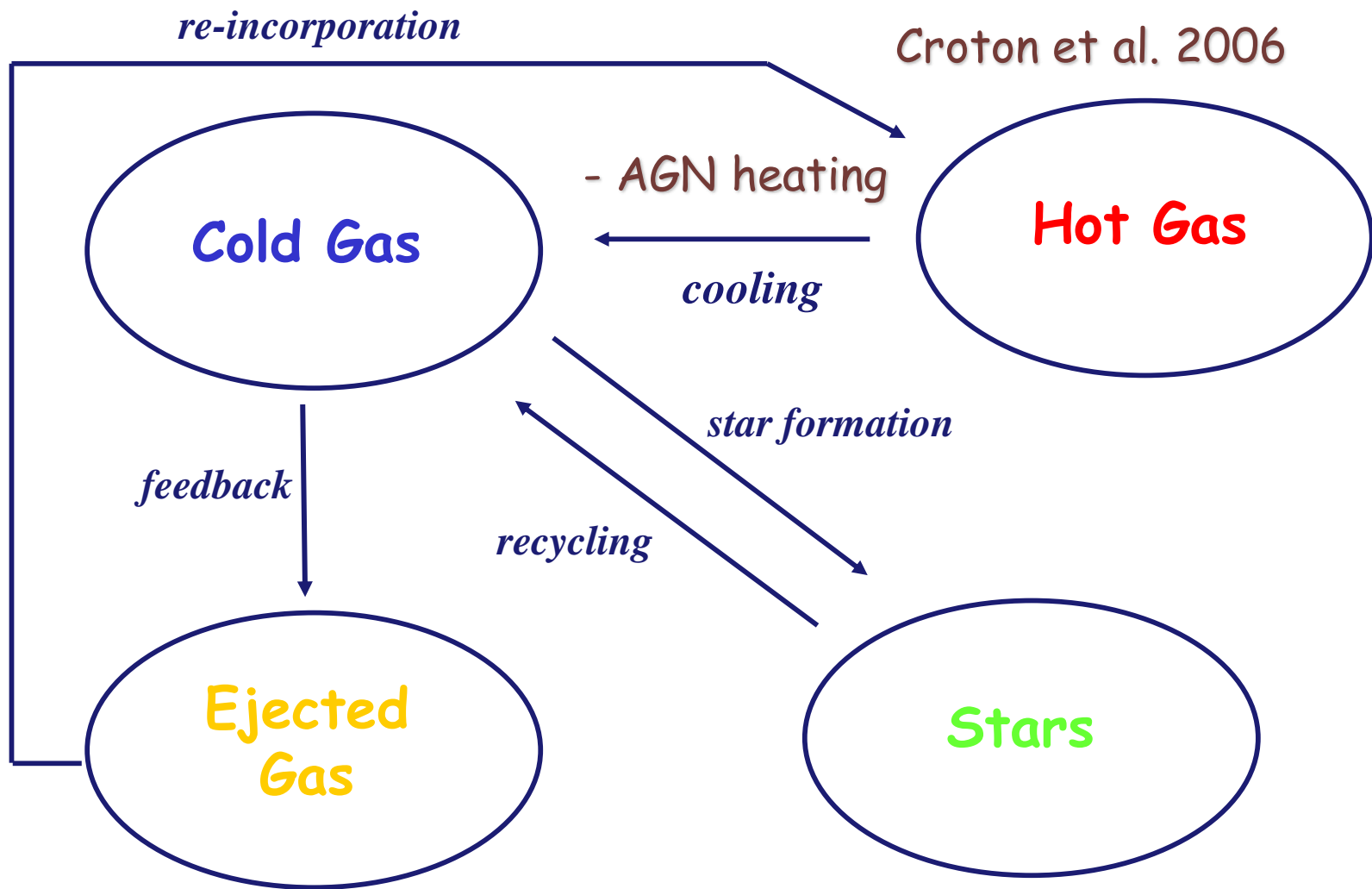
De Lucia et al. 2006, [astro-ph/0610373](#)

Semi-analytic models





The SAMs - the (simplified) physics

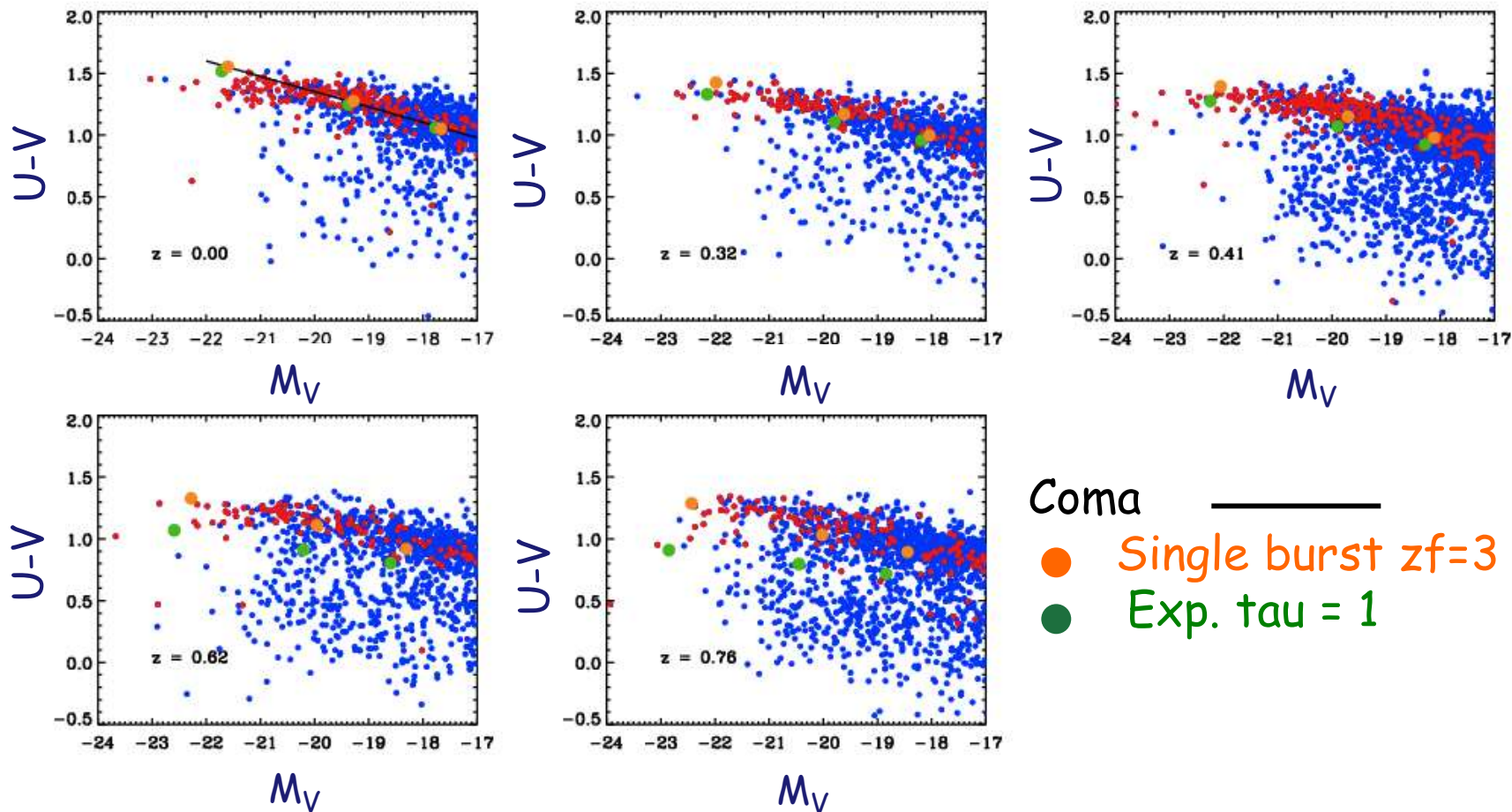


De Lucia, Kauffmann & White, 2004



The build-up of the CMR in SAMs

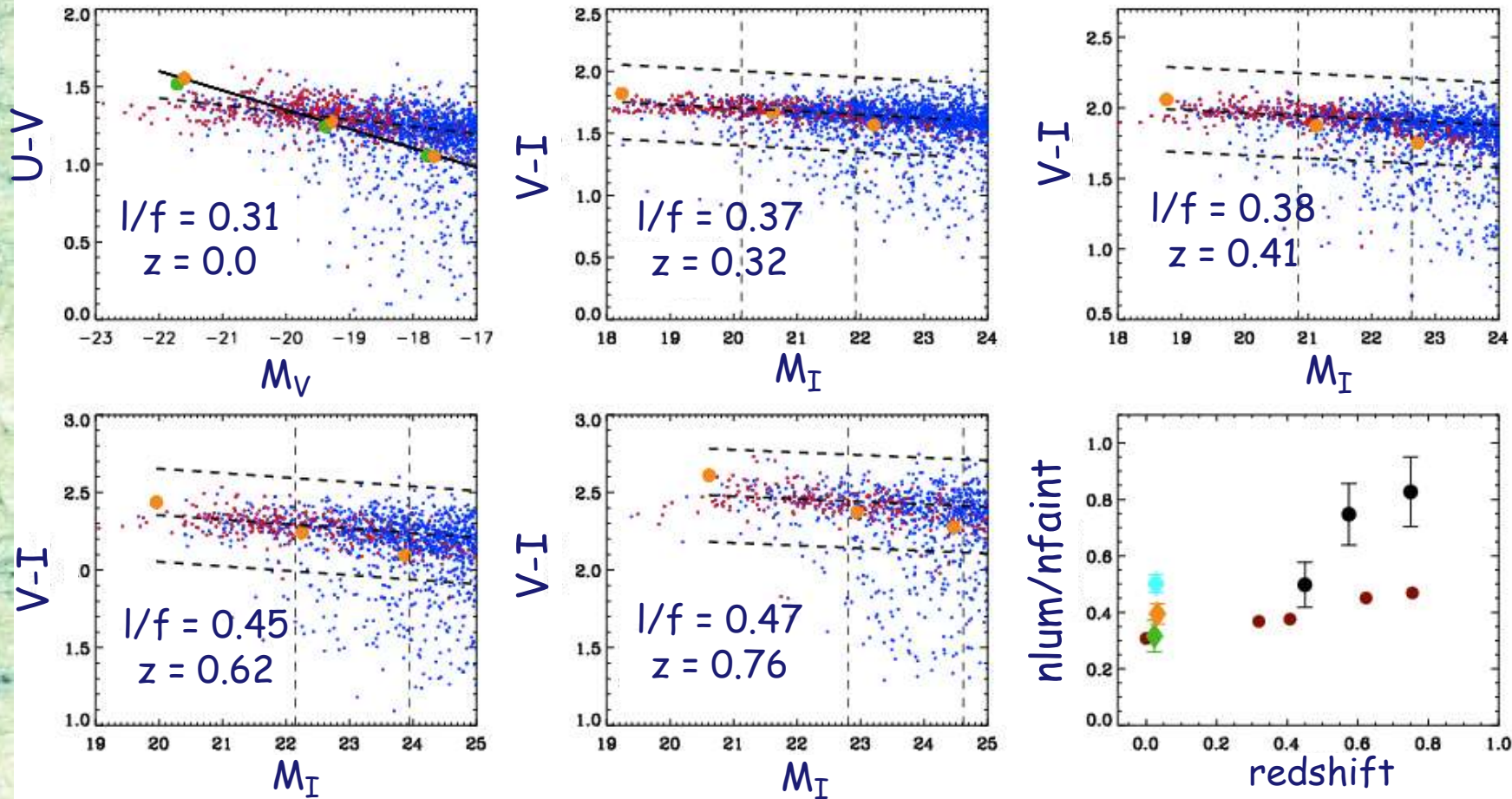
De Lucia et al. in preparation



The evolution of the CM relation in SAM models

The build-up of the CMR in SAMs

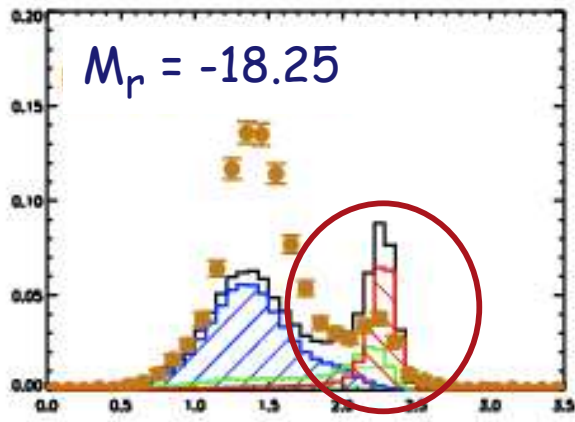
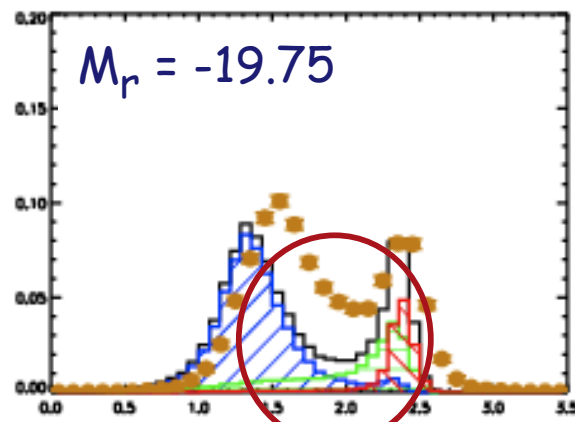
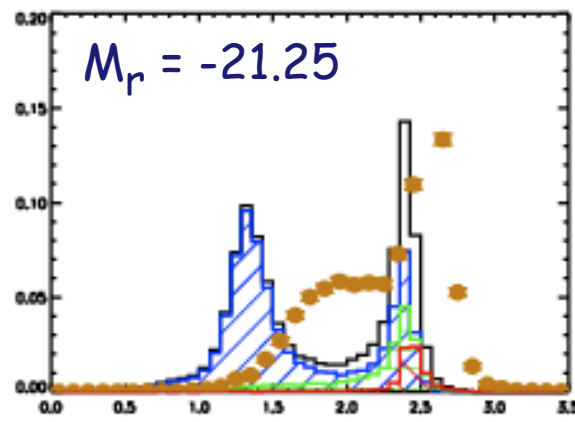
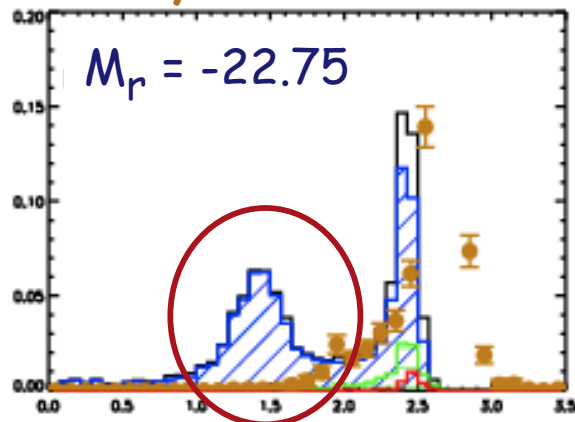
De Lucia et al. in preparation



Very little build-up of the red-sequence!

The colour-magnitude bimodality

Baldry et al. 2004



○ Tail of blue bright objects

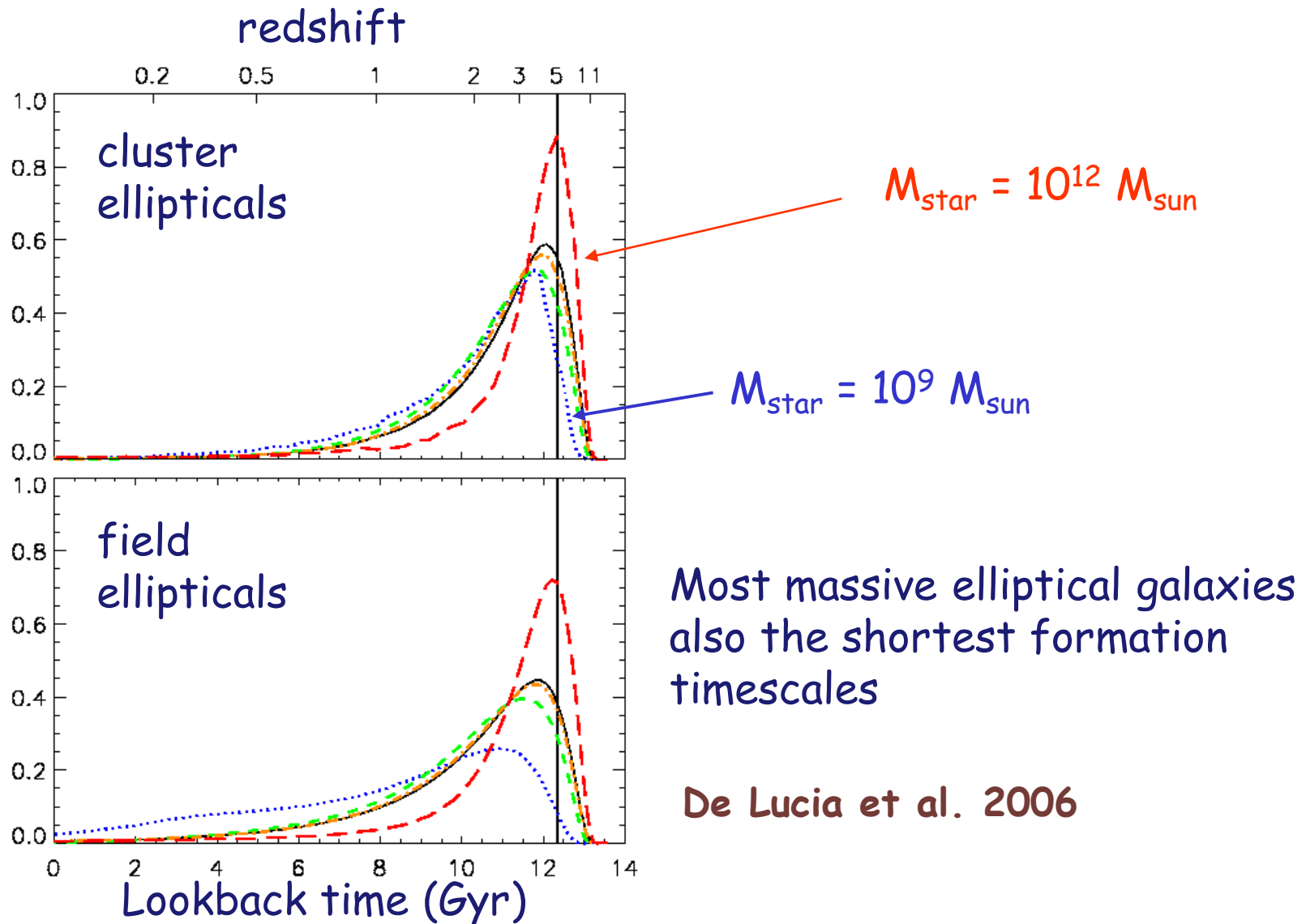
○ Excess of faint red satellites

○ Transition region not well populated

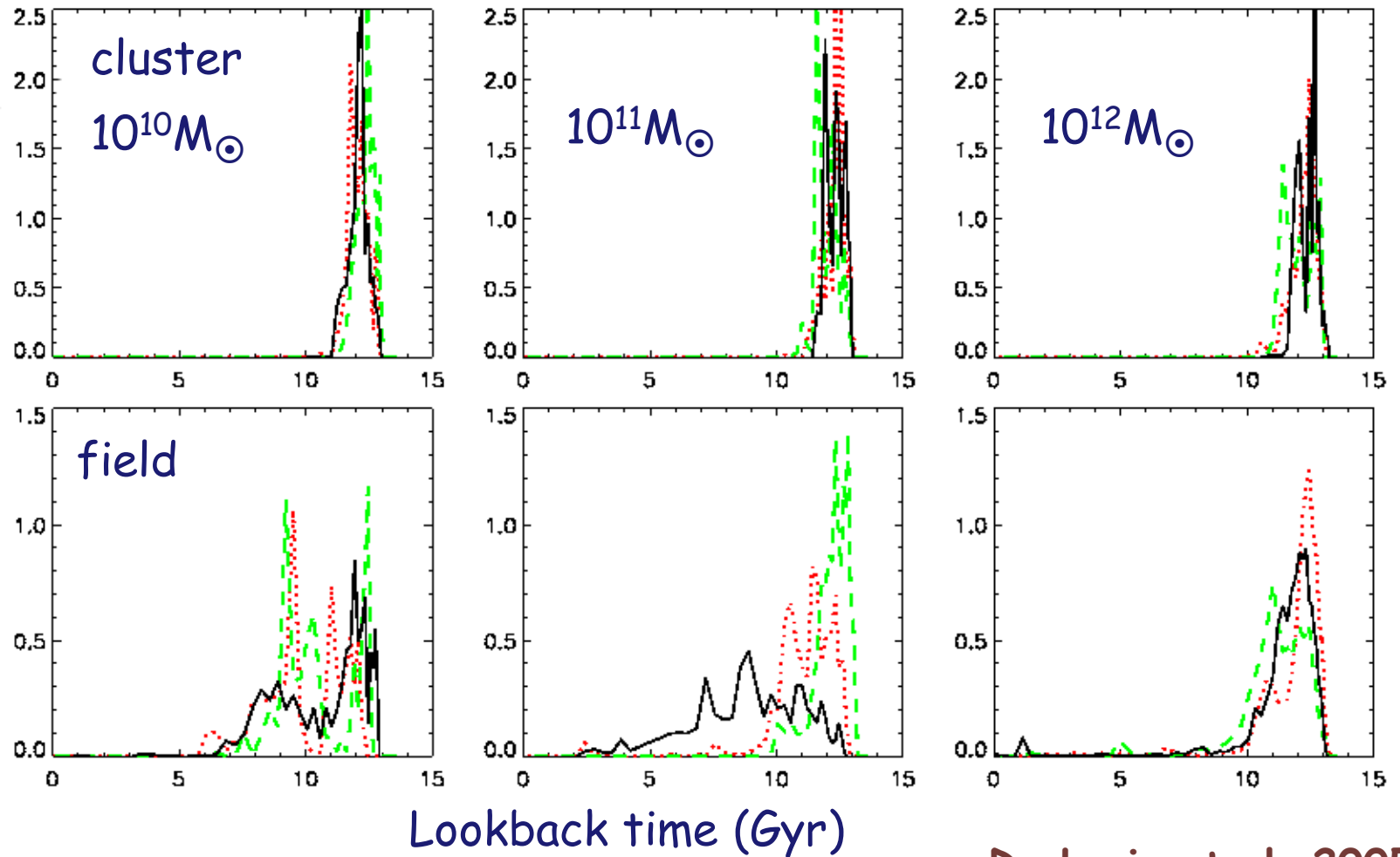
in preparation

➔ Quantitatively the CM bimodality is not well reproduced

The star formation history

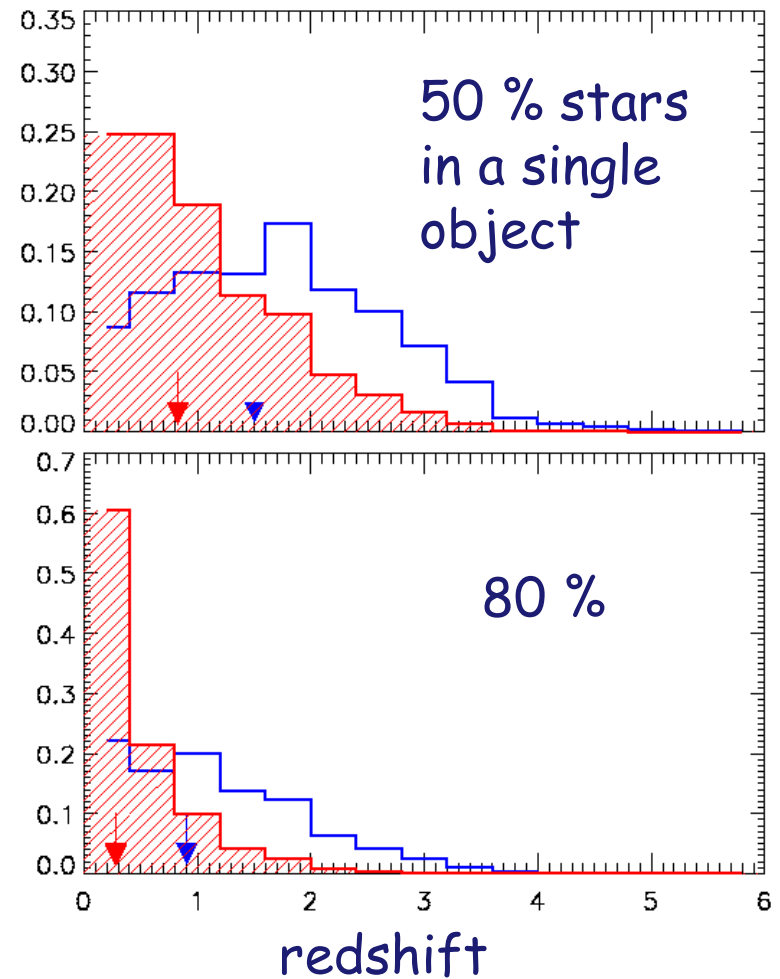
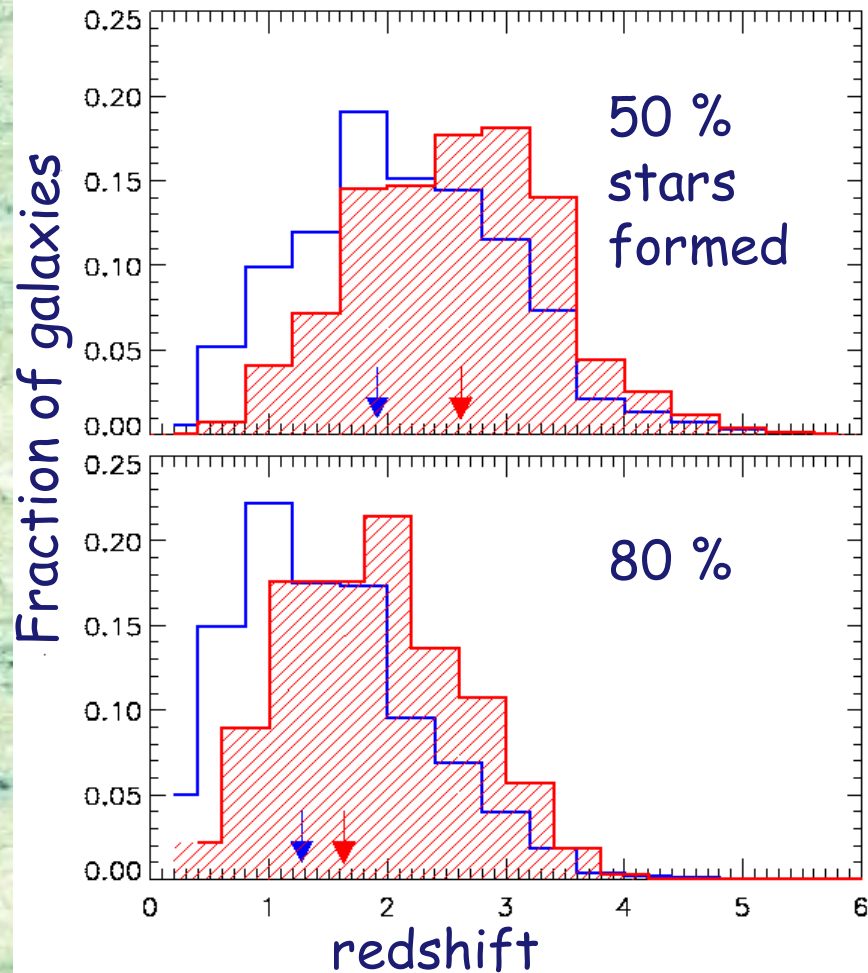


The star formation history



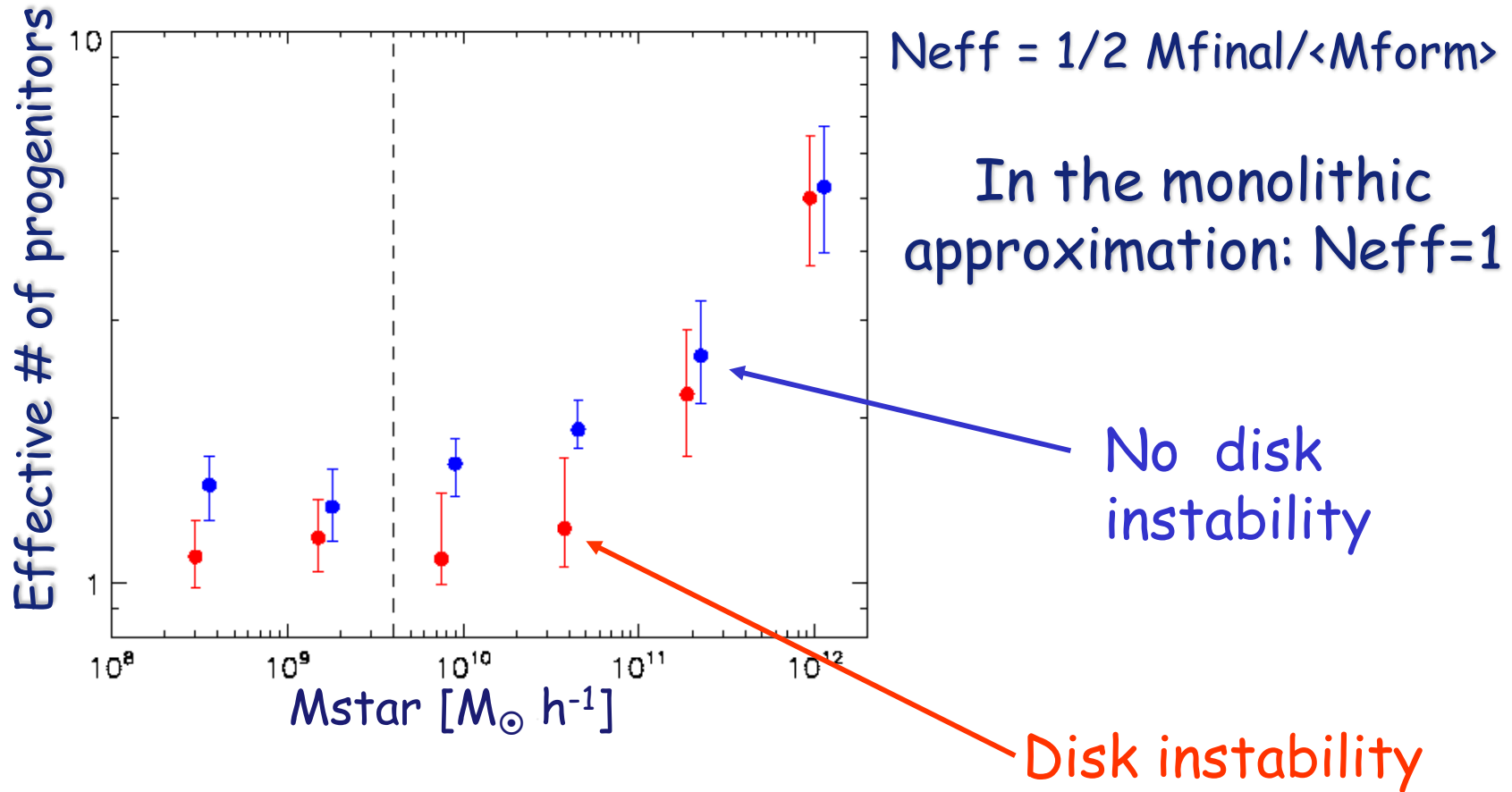
De Lucia et al. 2005

Formation and assembly



De Lucia et al. 2006

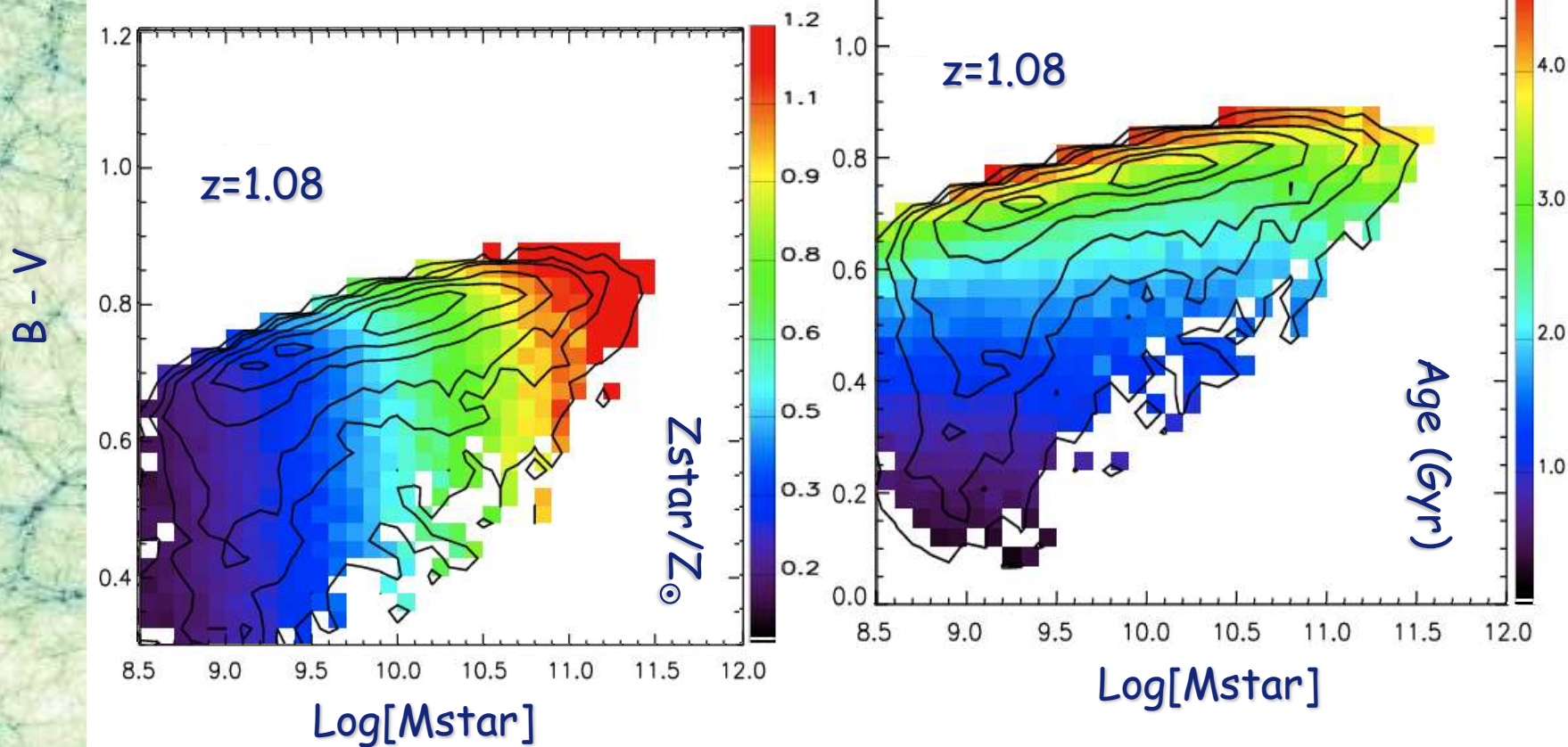
The ellipticals progenitors number



De Lucia et al. 2006

The age and metallicity dependence

De Lucia et al. in preparation



Questions

- ❧ Is there a truncation of the colour-magnitude relation at some redshift?
- ❧ Does this depend on the environment?
- ❧ Are SAMs able to reproduce quantitatively the colour bimodality?
- ❧ Are there too many satellites or just they go red too fast?
- ❧ Is the late assembly time in agreement with the observed evolution of the mass/luminosity function?