Properties of the Bright and Dwarf Galaxy Populations in Nearby Clusters

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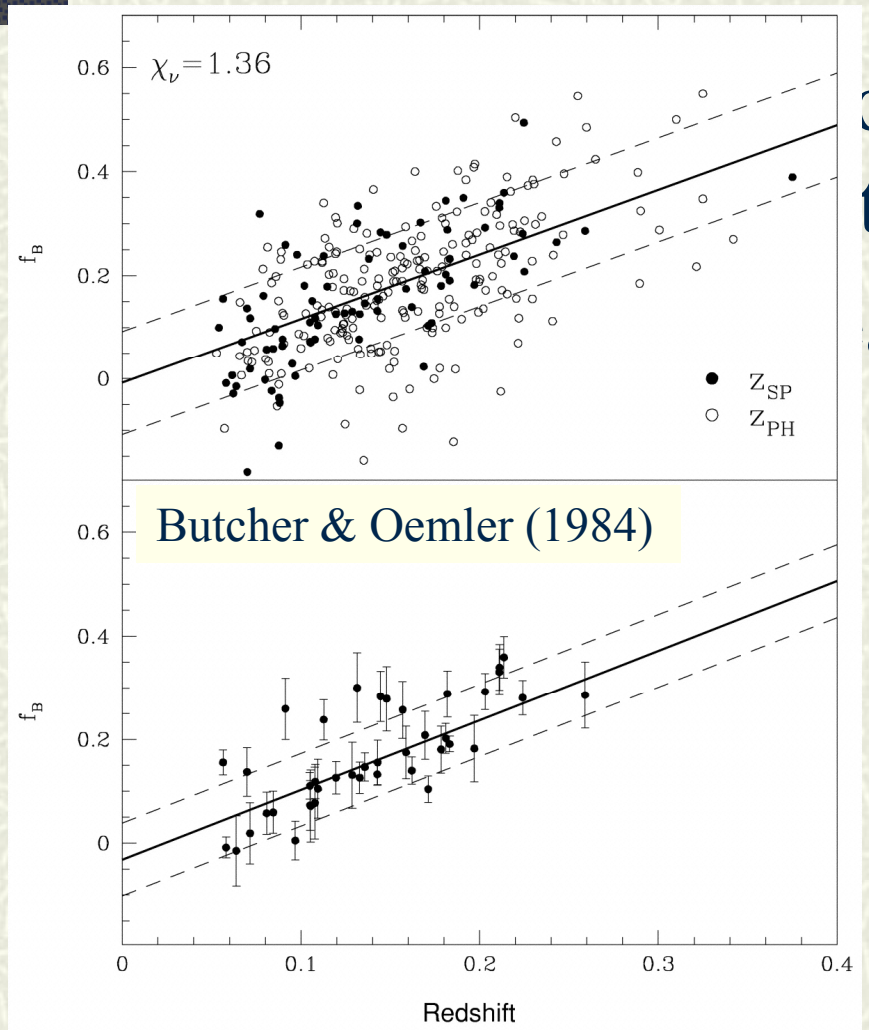
Estallidos V, Granada, 2007

Introduction

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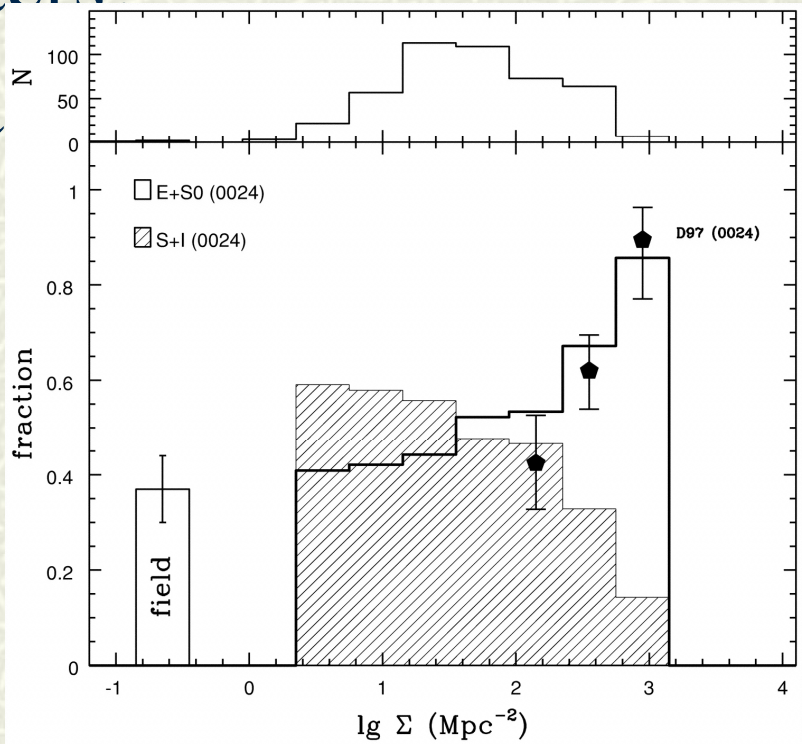
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a



Butcher & Oemler (1984)

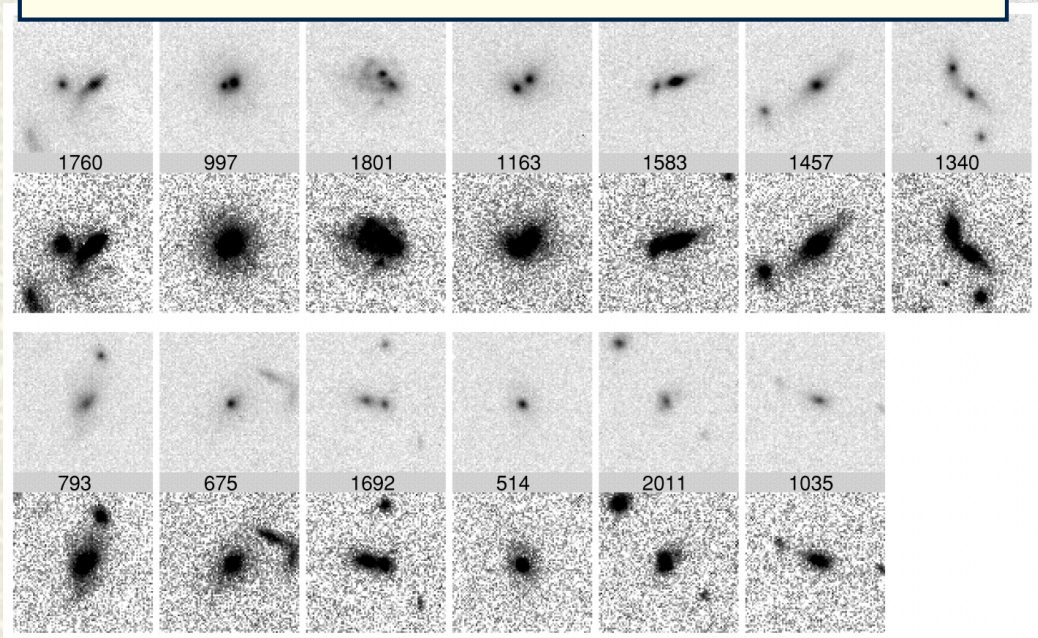
Dressler (1980)

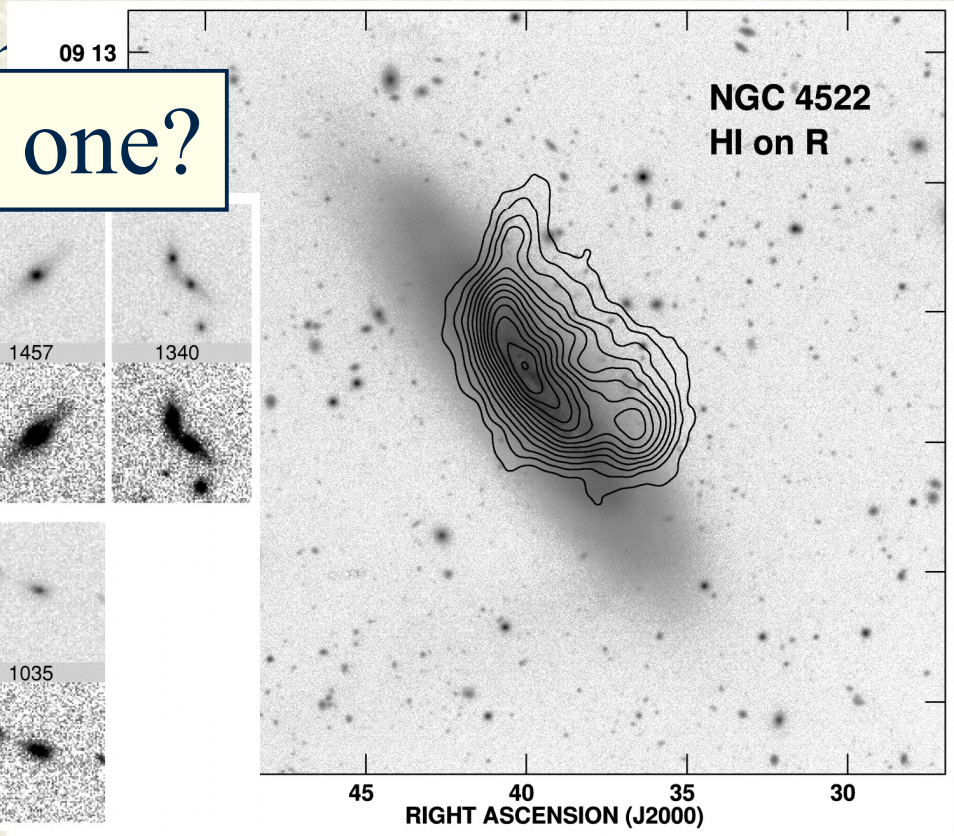


Introduction

- What drives galaxy evolution? Does the environment really r

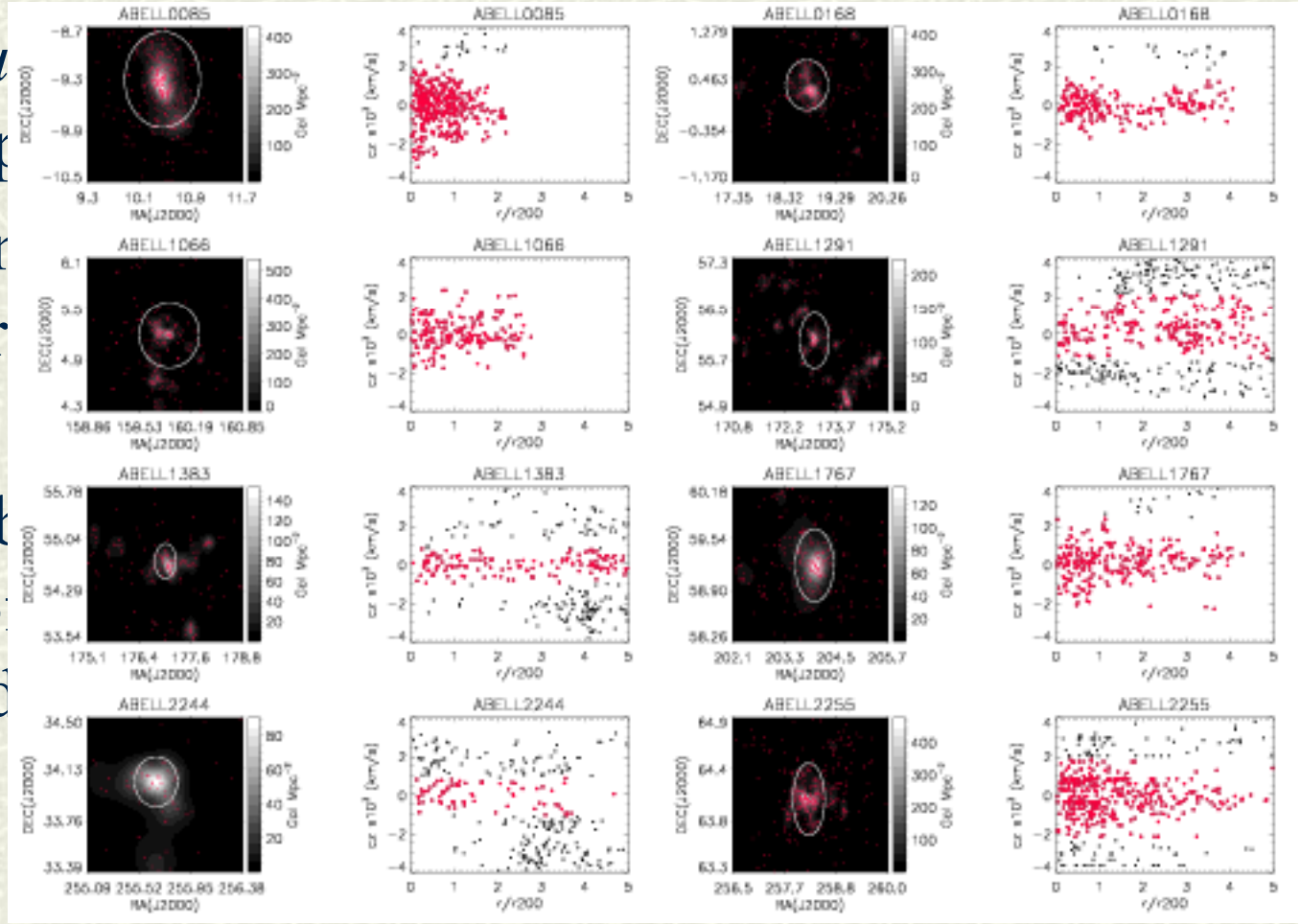
Is there a dominant one?





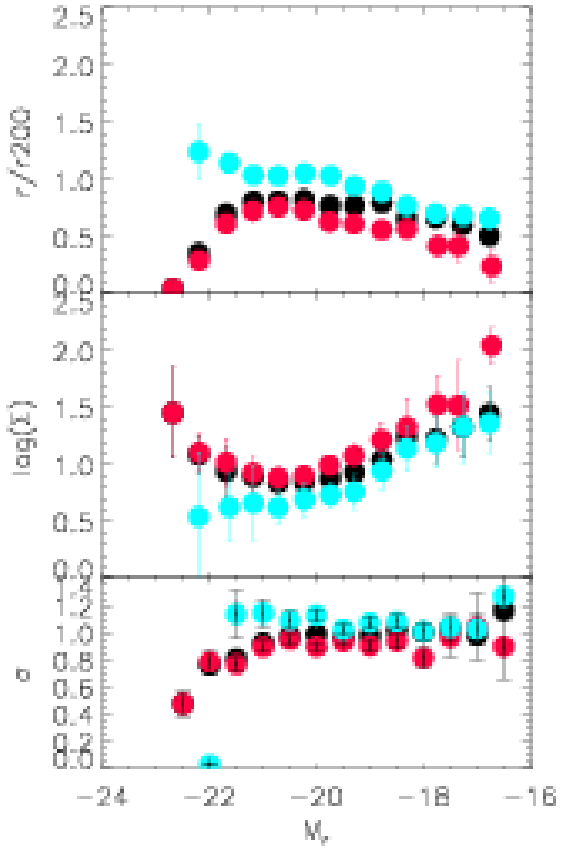
The sample

- SDSS DR5 - *u*
  imaging and sp
- Sample of 88 r
  (z<0.1) cluster
  galaxies!
- Detailed memb
  allows study o
  segregations, d



The Bright Population: VDPs

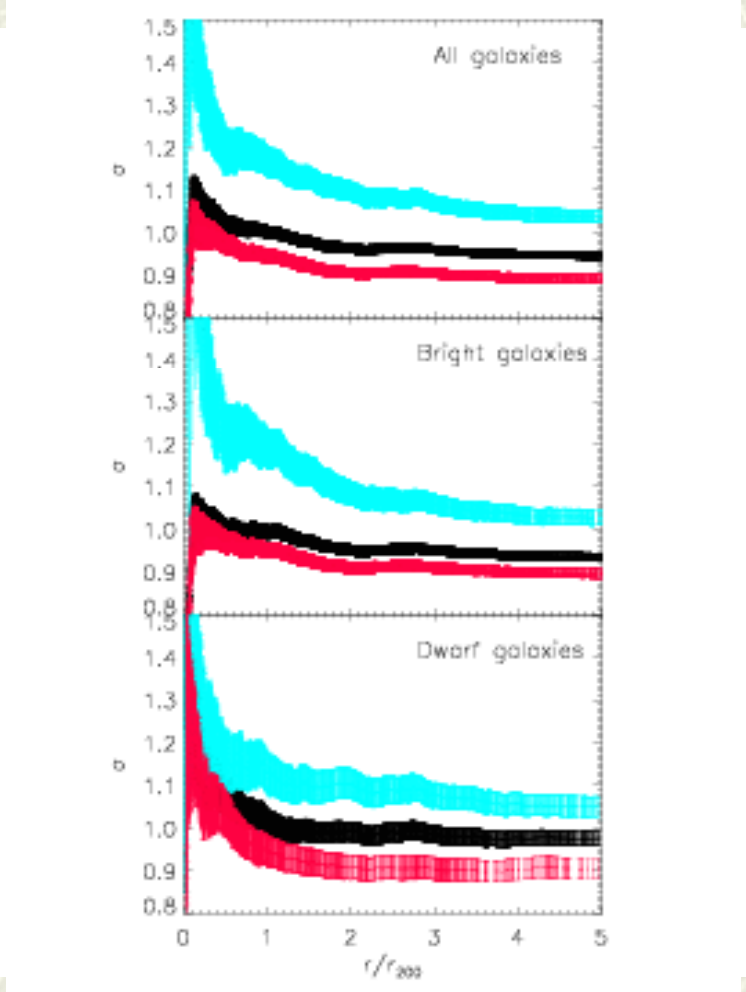
- *u-r* = 2.22 separates early- and late-types (Strateva et al. 2001).
- BCGs:
  - Core regions.
  - Very small velocity dispersions.
  - Reflect past merging and accretion history (Biviano & Katgert 2004).



The Bright Population: VDPs

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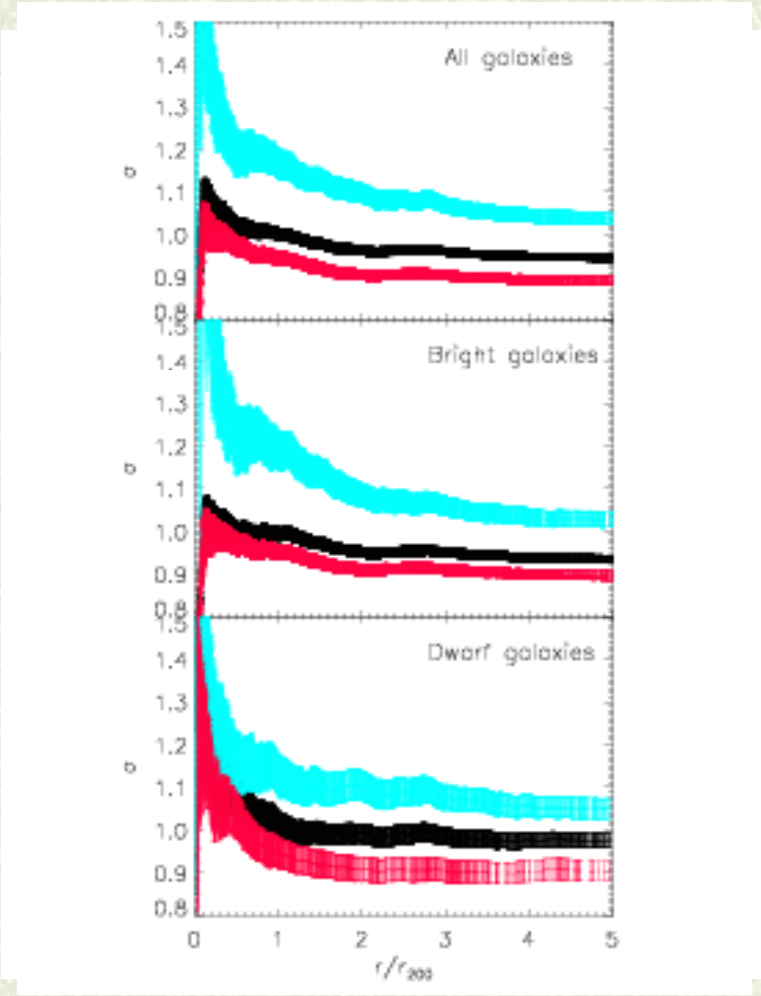
- Early-types:
  - Highest fraction (62%).
  - Inner cluster regions (M-D relation).
  - Flat VDPs with mild outwards decline.



The Bright Population: VDPs

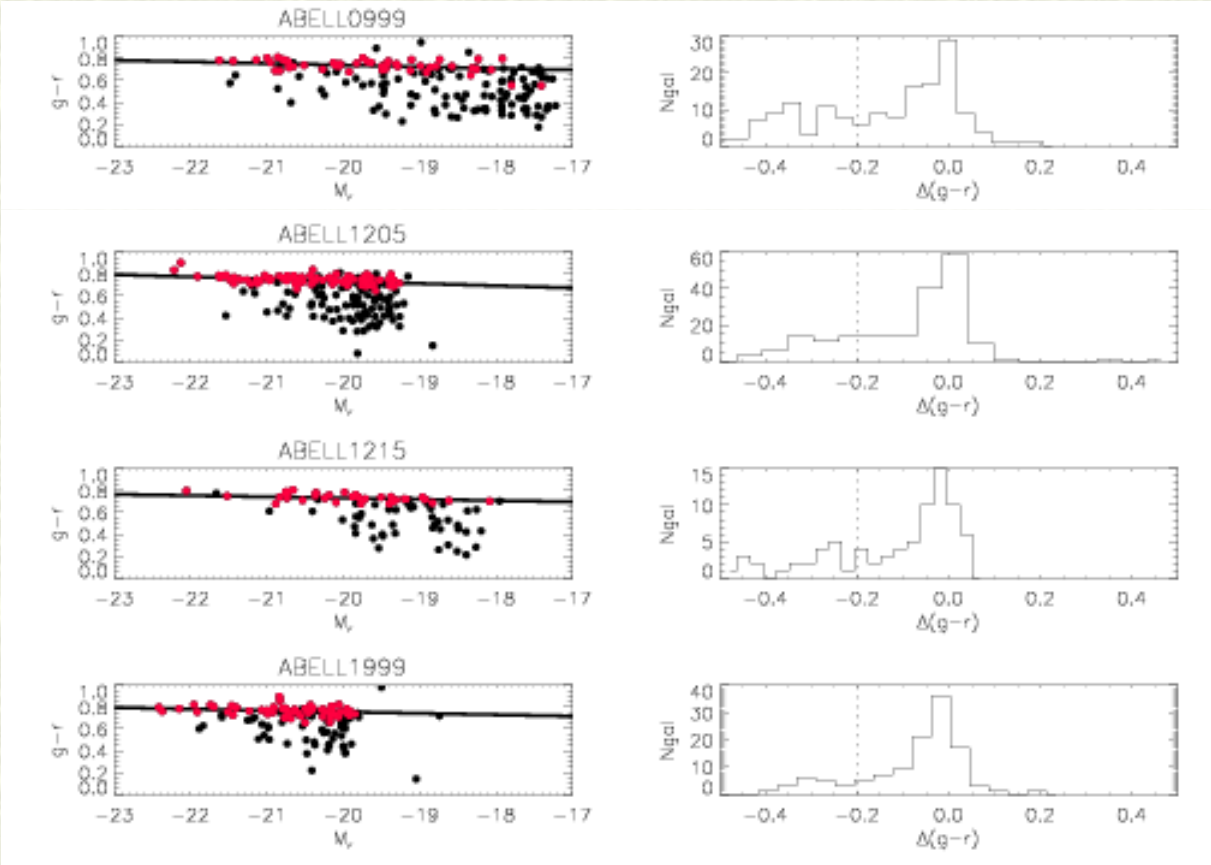
- *u-r* = 2.22 separates early- and late-types (Strateva et al. 2001).

- Late-types:
  - Not so radially concentrated.
  - Higher values of σ with decreasing VDPs.
  - Population on more anisotropic and radial orbits.



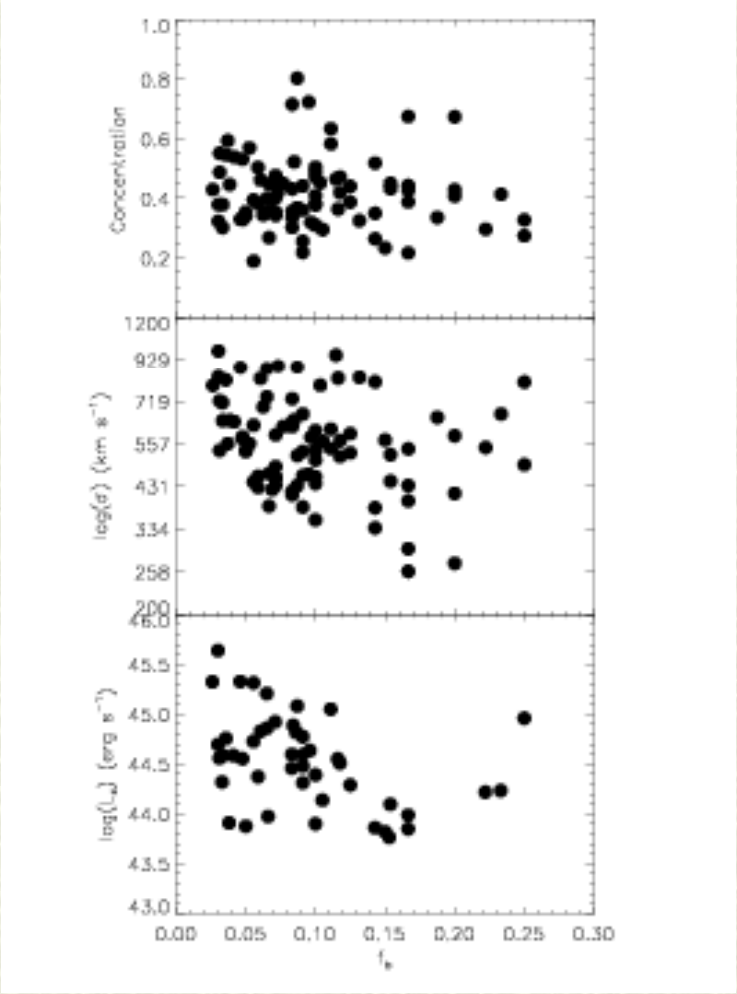
The Bright Population: f_b

- Fraction of blue galaxies provides clues on evolution of SF.



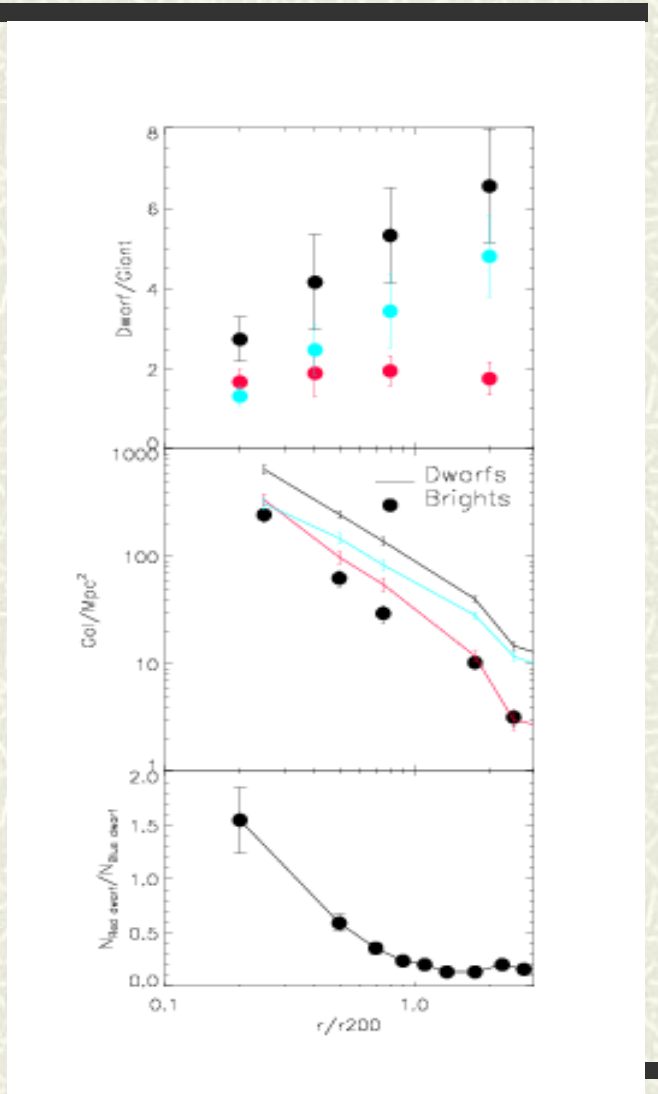
The Bright Population: f_b

- No clear correlation with global cluster properties.
- Slight trend with L_x might indicate that the effects of the global cluster potential are only important in massive clusters (?).



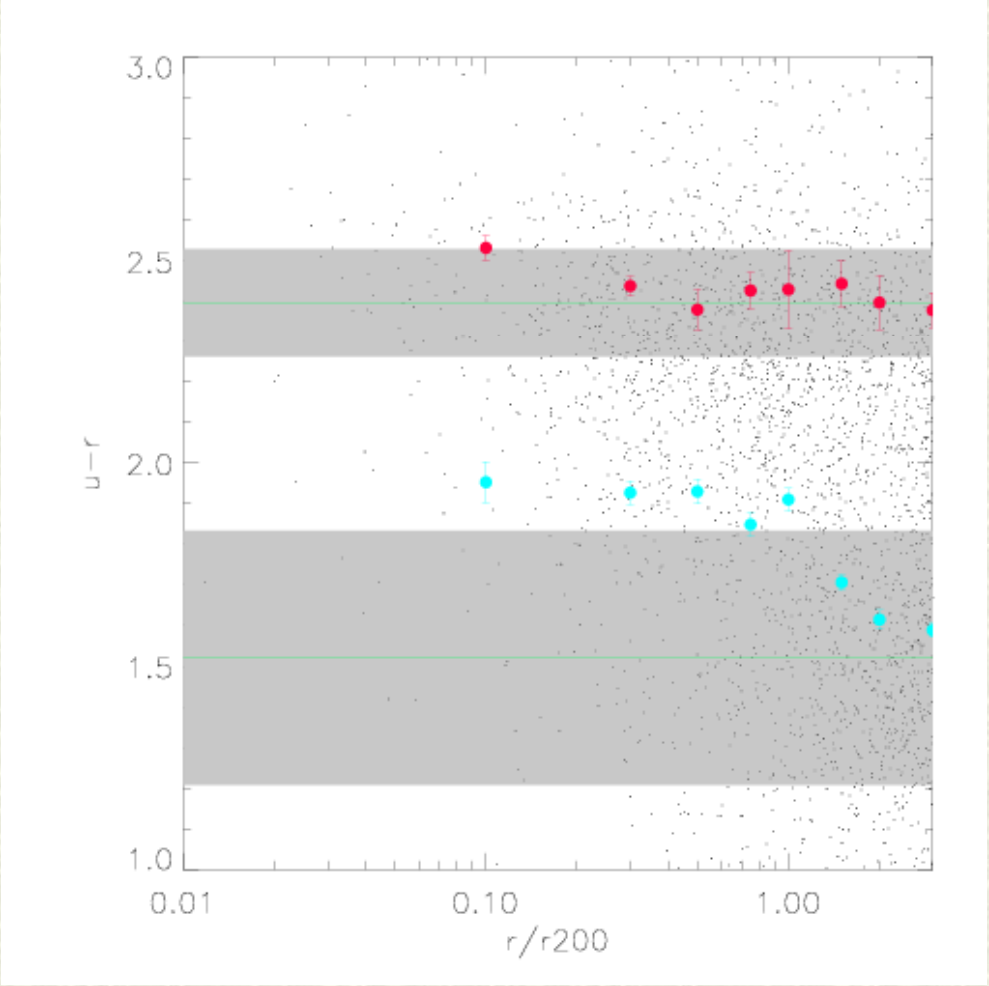
The Dwarf Population: DGR

- Dwarfs: $M_r > M^*+1$
- Giants: $M_r < M^*$
- Dwarf to Giant Ratio (DGR) grows in outer (less dense) regions.
- Result of blue dwarfs having a more extended (less concentrated) distribution: avoid cores.
- Red dwarfs have a flat distribution (constant LF faint-end slope, see Popesso et al. 2006). But not in equilibrium!



The Dwarf Population: Colors

- Red dwarfs have colors independent of environment, same of field.
- Blue dwarfs are redder within r_{200}, similar to field outwards.
- Existence of a processes that converts blue dwarfs into red ones.



Conclusions

- Environment definitively plays a role, responsible mechanism difficult to disentangle.
- Global cluster mechanisms (ram-pressure, cluster potential) might be only important in massive clusters, and mainly for dwarf systems.
- Local environment might be the main responsible of bright galaxy evolution (group preprocessing).
- Tidal effects (harassment) might turn blue dwarfs into redder systems.

SEE YOU IN TENERIFE!