

Probing Galaxy Evolution with Compact Groups of Galaxies

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$Z \sim 0.2$



$Z \sim 0.1$



$Z \sim 0.07$

CGs were thought to be ideal places for studying galaxy evolution

$$\rho \uparrow \quad \sigma \downarrow$$

**High merging rate
(not necessarily!)**

Better understanding of the weaknesses of both local and higher redshift samples is necessary in order to distinguish reality from these naïve assumptions.

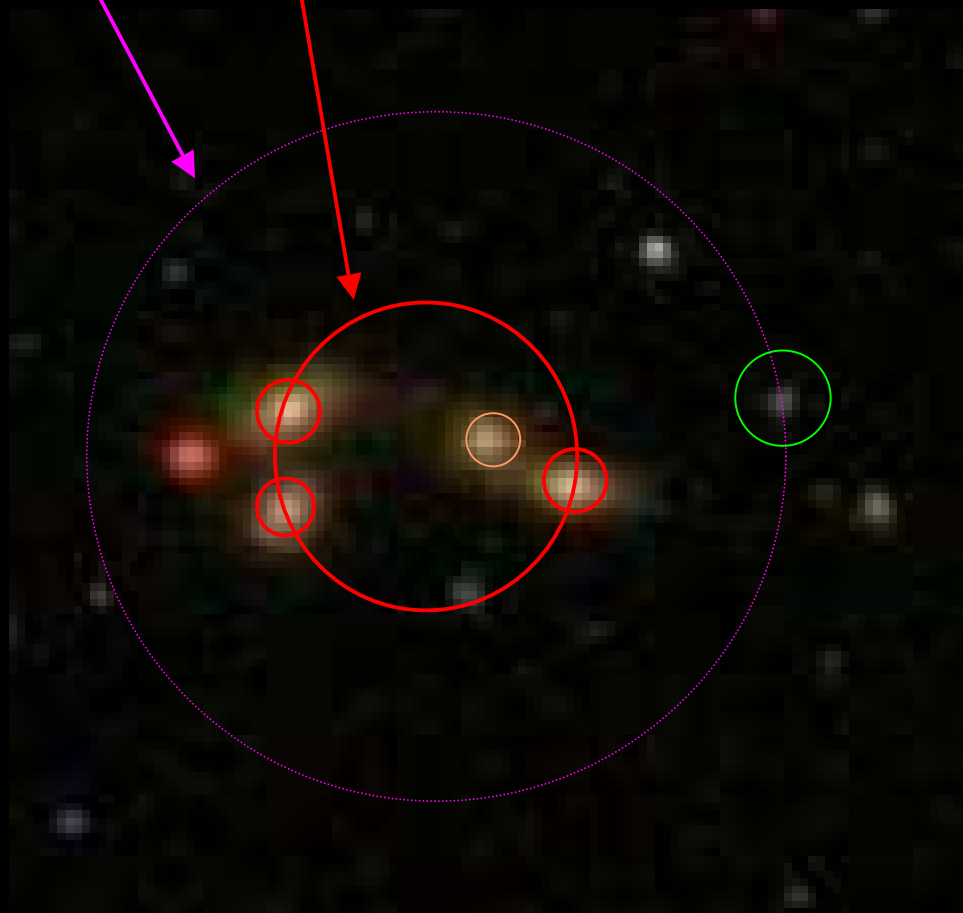
de Carvalho et al. (2005) define 459 small, high density groups of galaxies out to $z \sim 0.2$ in a region of 6260 square degrees in the northern sky derived from the DPOSS ($r < 19.0$). Median redshift of 0.12 (complementary to Hickson's catalog, which has a median redshift of 0.03).

How to Find CGs in a Galaxy Catalog ?

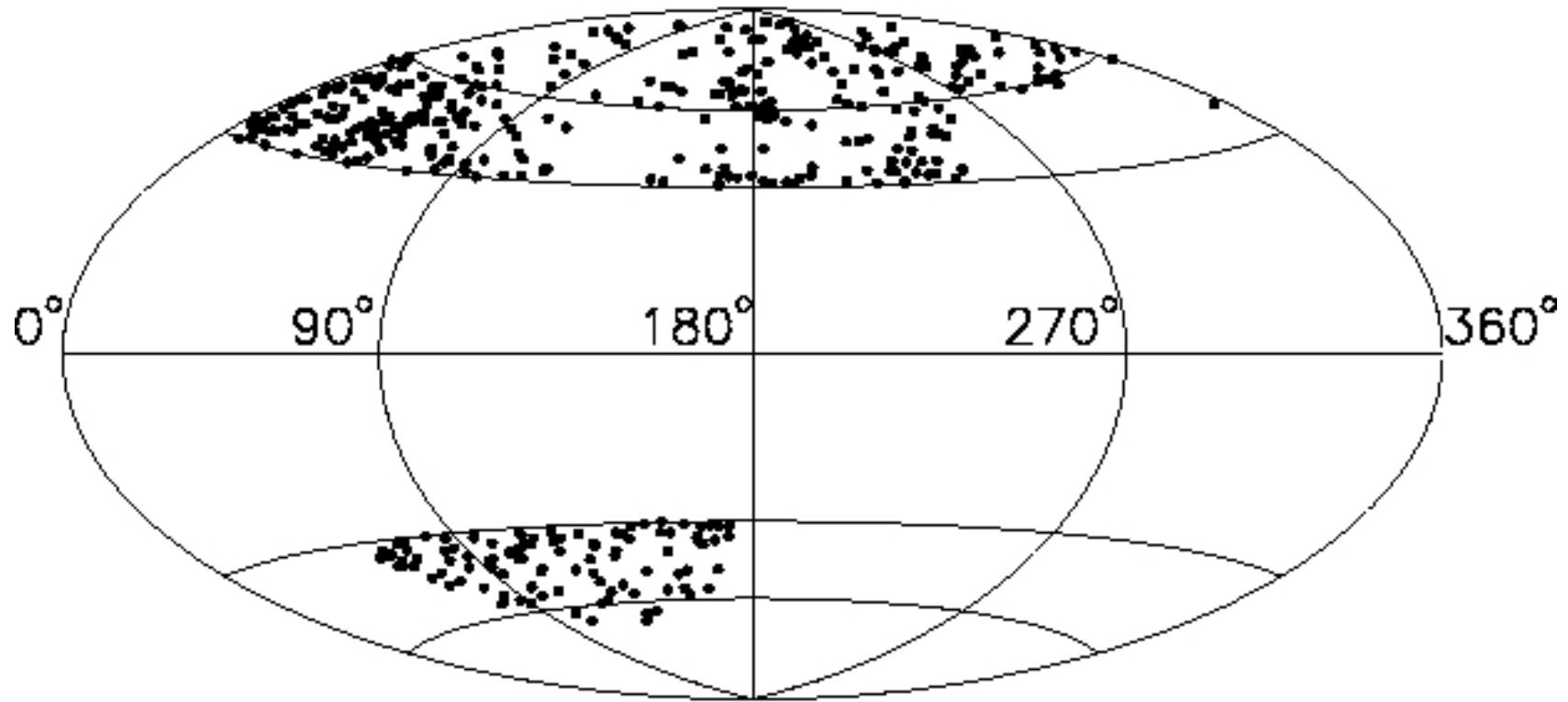
$$N \geq 4, \Delta\text{mag}_{\text{COMP}} = \text{mag}_F - \text{mag}_B \leq 2.0$$

$$R_{\text{ISOL}} \geq 3 R_{\text{GR}}(0.5m)$$

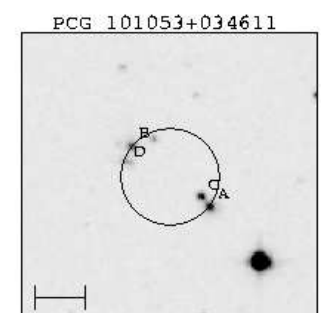
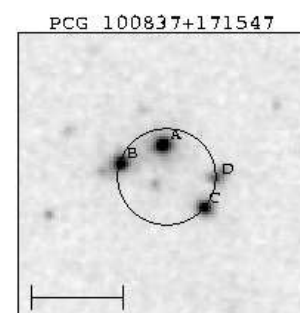
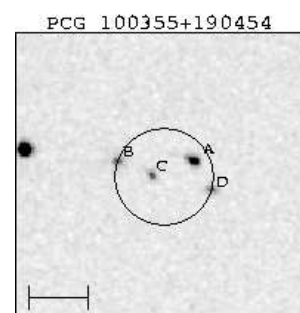
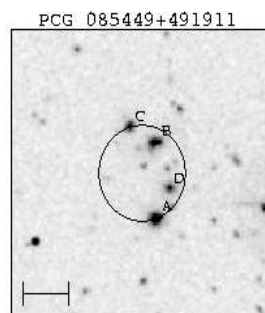
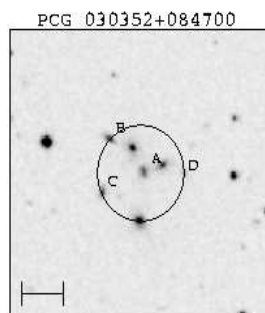
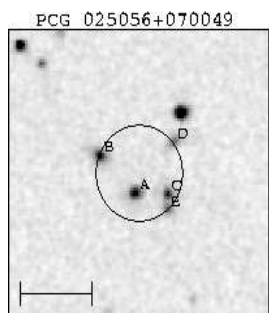
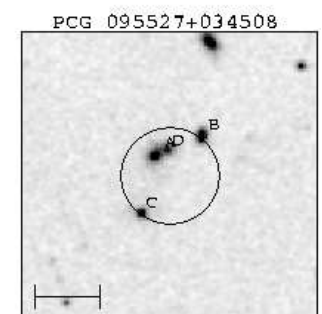
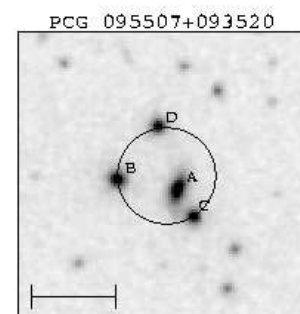
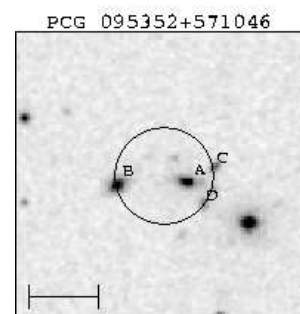
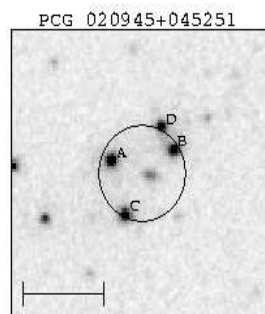
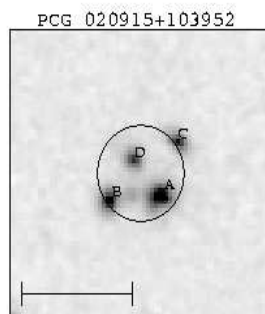
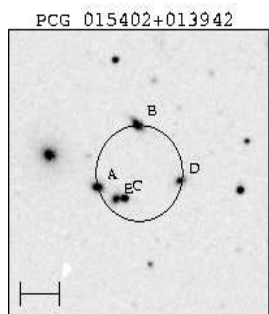
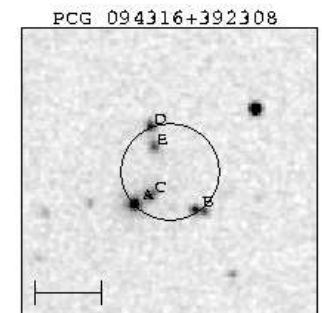
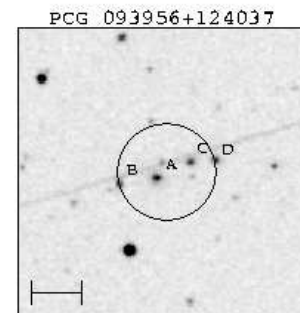
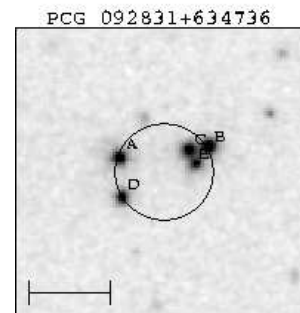
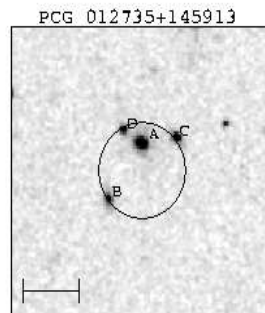
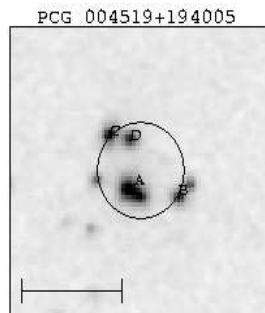
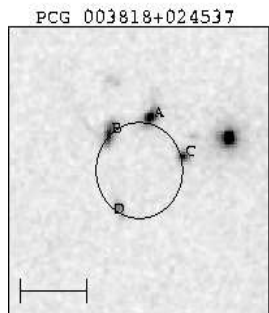
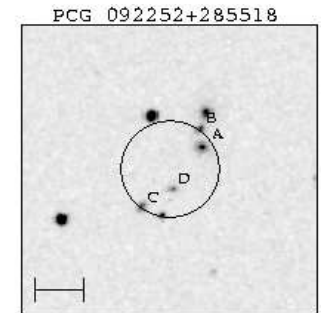
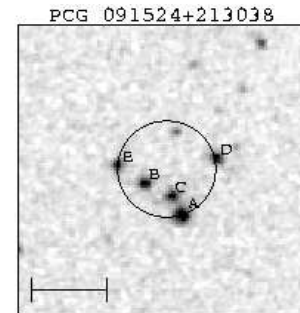
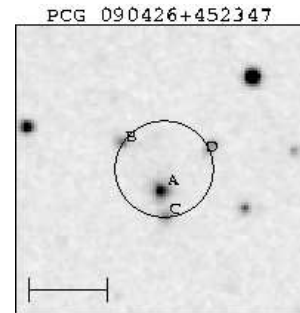
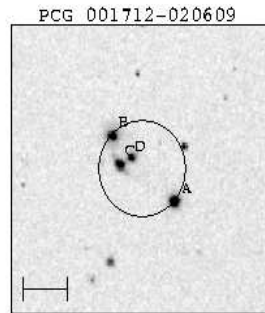
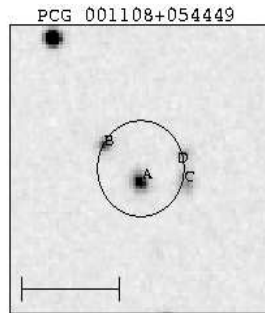
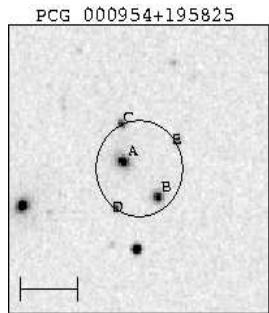
$$\mu_{\text{GR}} \leq 24.0$$



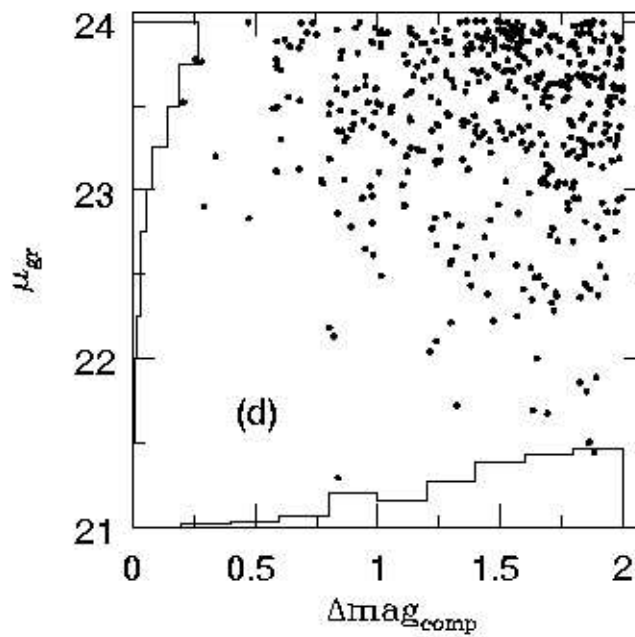
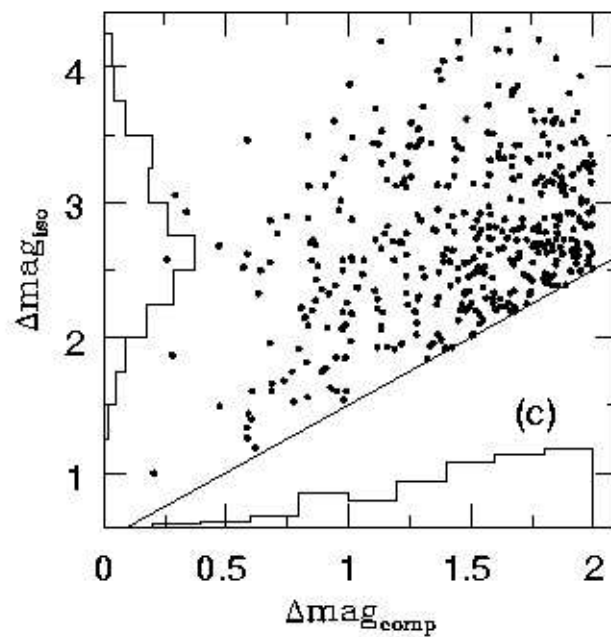
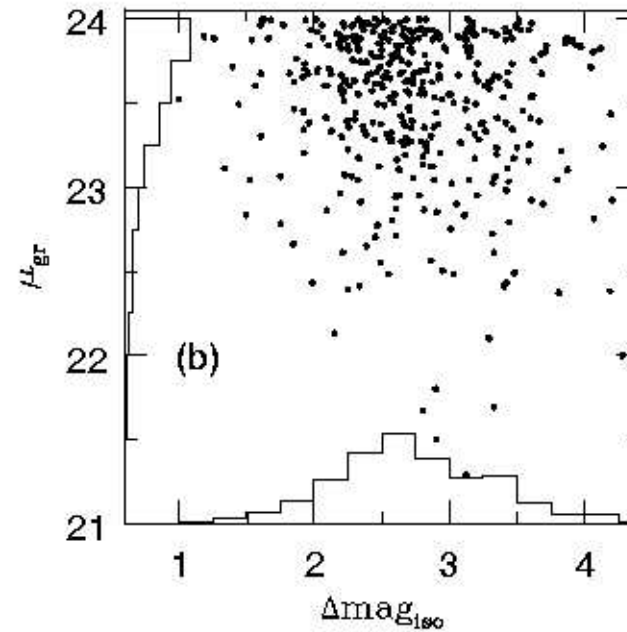
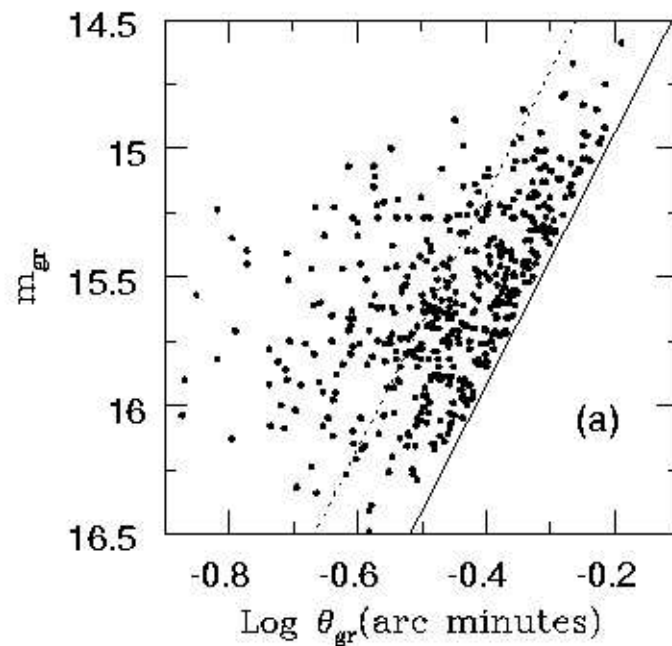
How are they distributed on the sky ?



SAMPLE

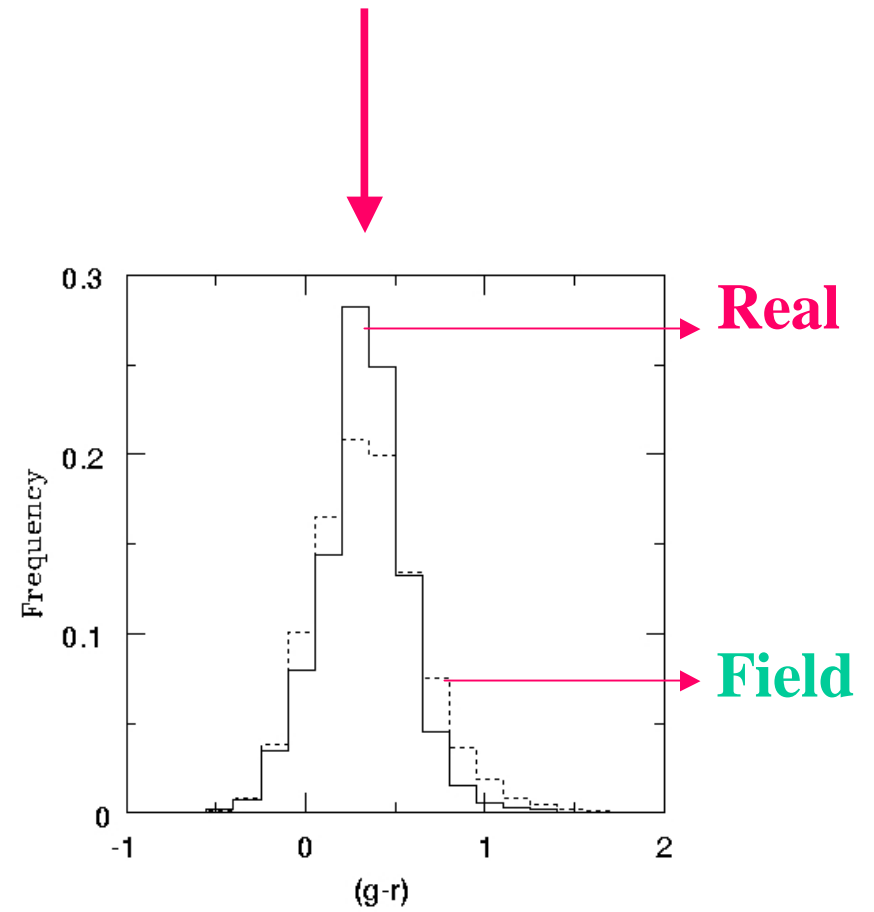
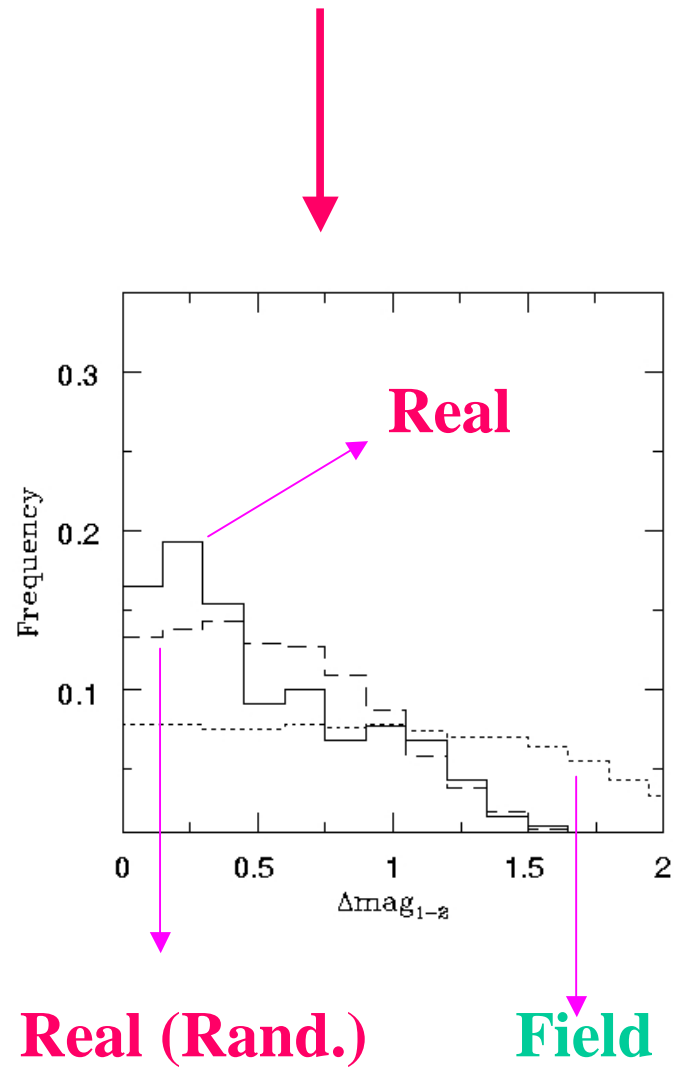


Global Properties - Systematic Effects

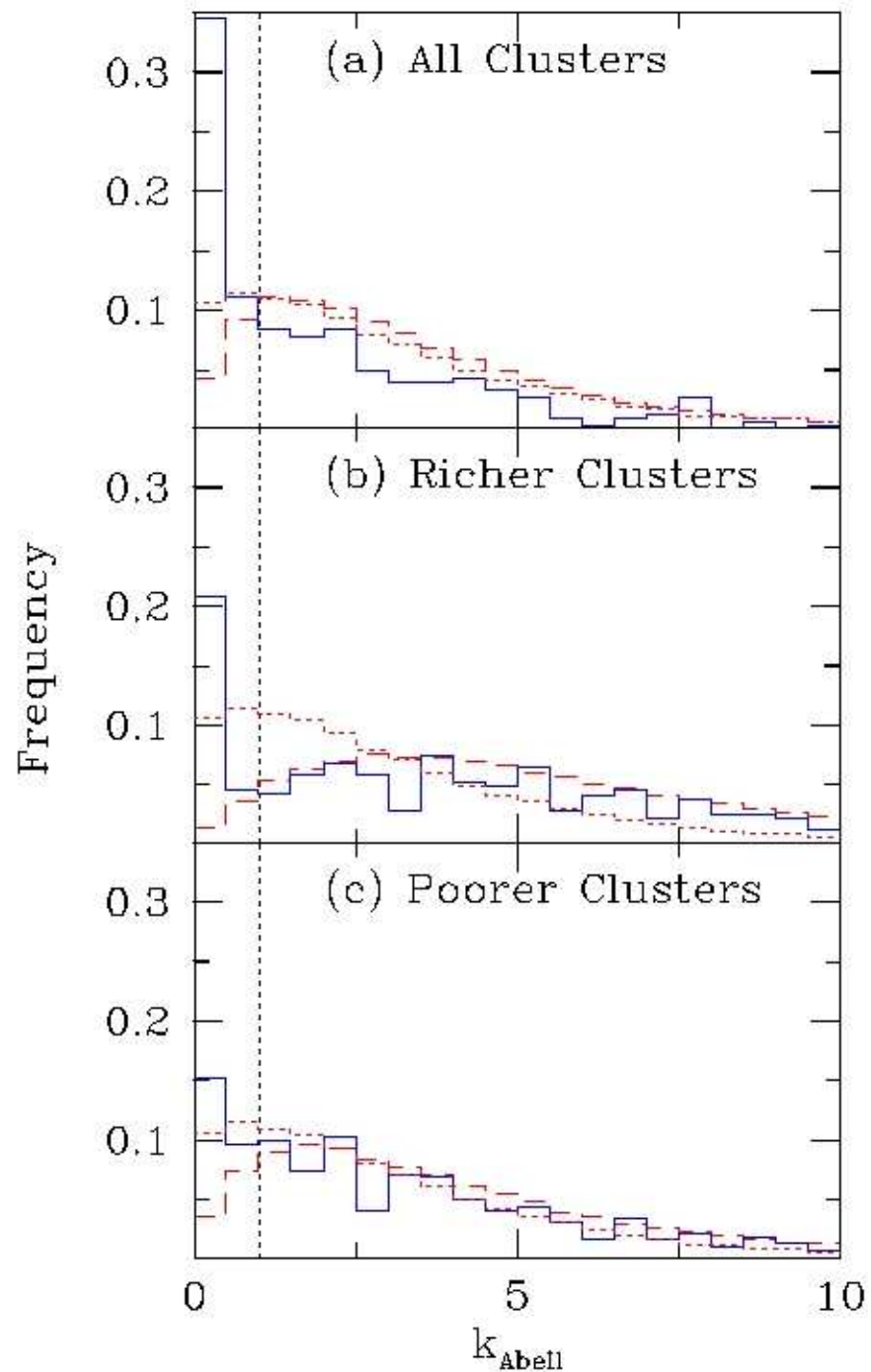


Is merger playing a role ?

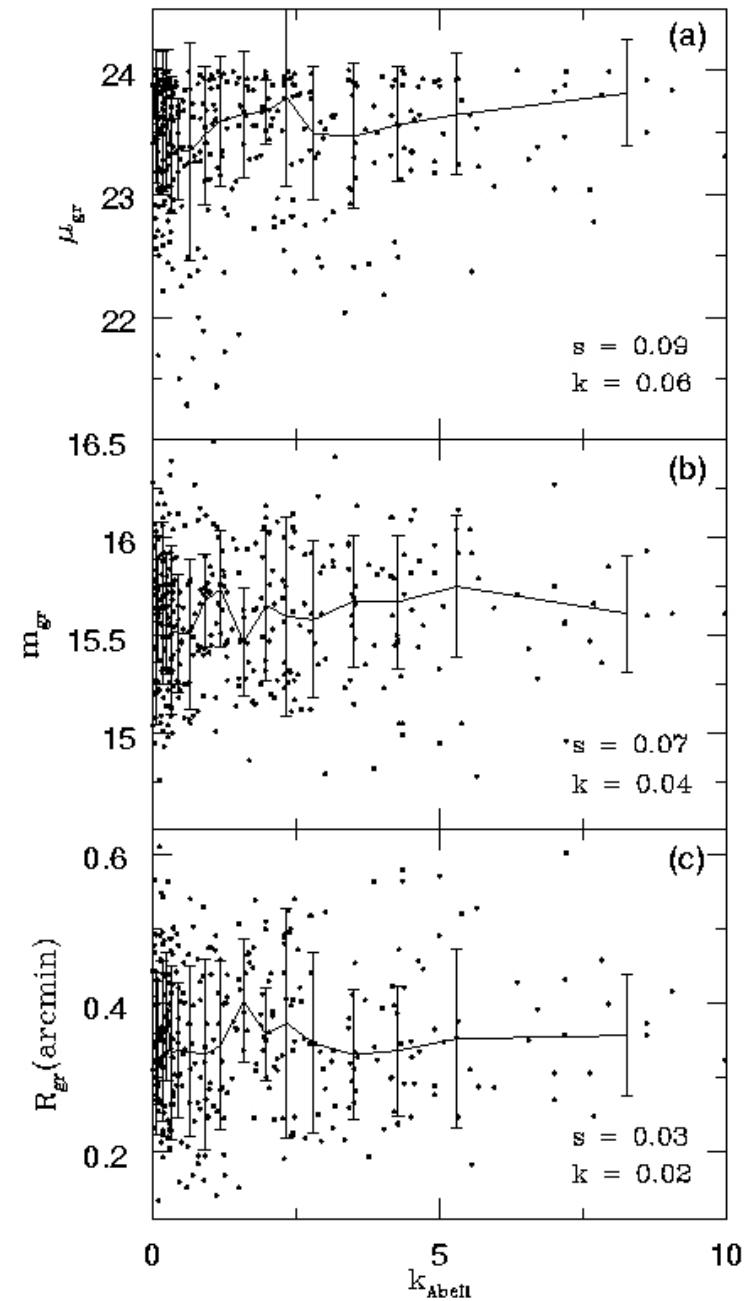
What about color information ?



What is the connection between CGs and Clusters ?



Are CGs bound systems or projection effects ?



Exploring CG properties with SOAR



Morpholog - Densityy

Colors and enviroments

Butcher & Oemler Effect

Lensing (Mass)

Fundamental Plane and other properties

How do they evolve ? Where do they come from ?