

Galaxies in groups and clusters

UVIT-ASTROSAT discussion meeting, 27th-29th Sept 2006

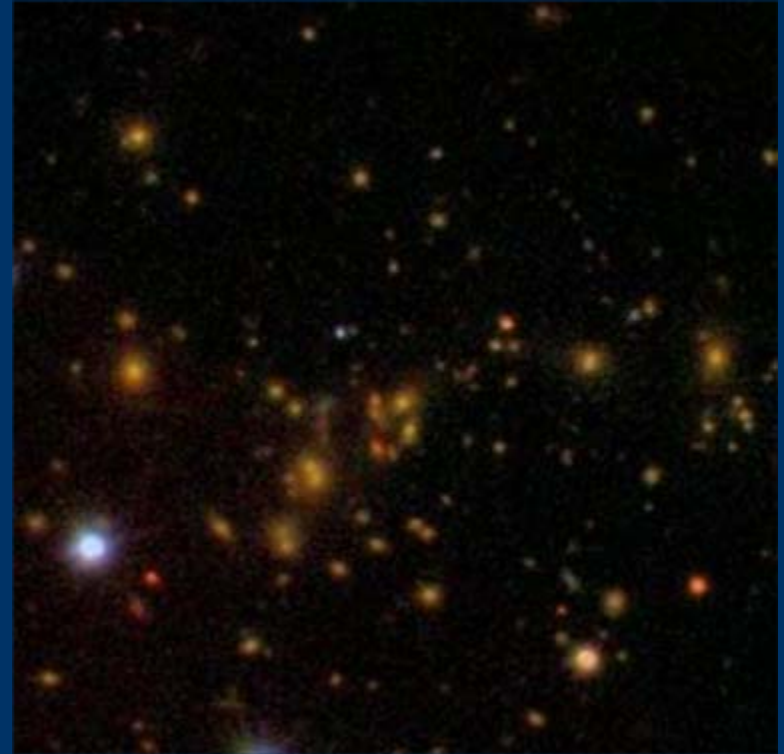
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- ◆ Local population of galaxies
 - “red” with early type morphology and little star formation
 - “blue” with active SF and late type morphology
- ◆ Galaxy morphology & evolution
 - local & related to formation
 - affected by environment



Clusters of Galaxies

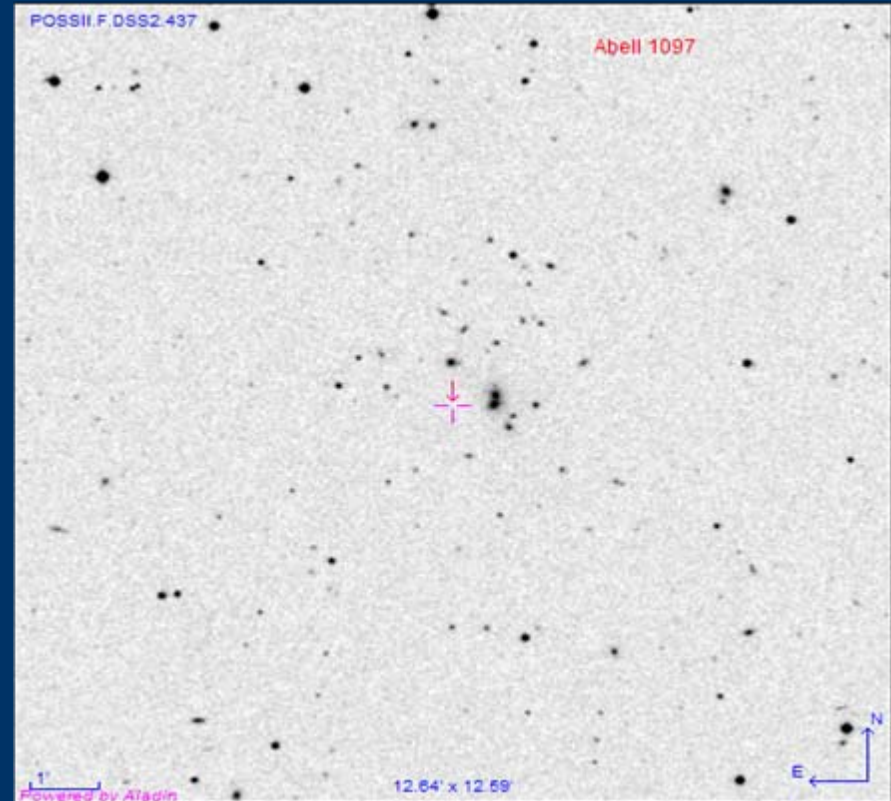
- Often identified by presence of dominant central galaxies
- Large size and membership
- Central regions – more early type, luminous galaxies
- Outer regions – more late type galaxies
- Radio, X-ray
- Extended emission



Abell 700

Groups of Galaxies

- Poor clusters – few to few tens of members
- No obvious bright central member
- Size – few arcminutes

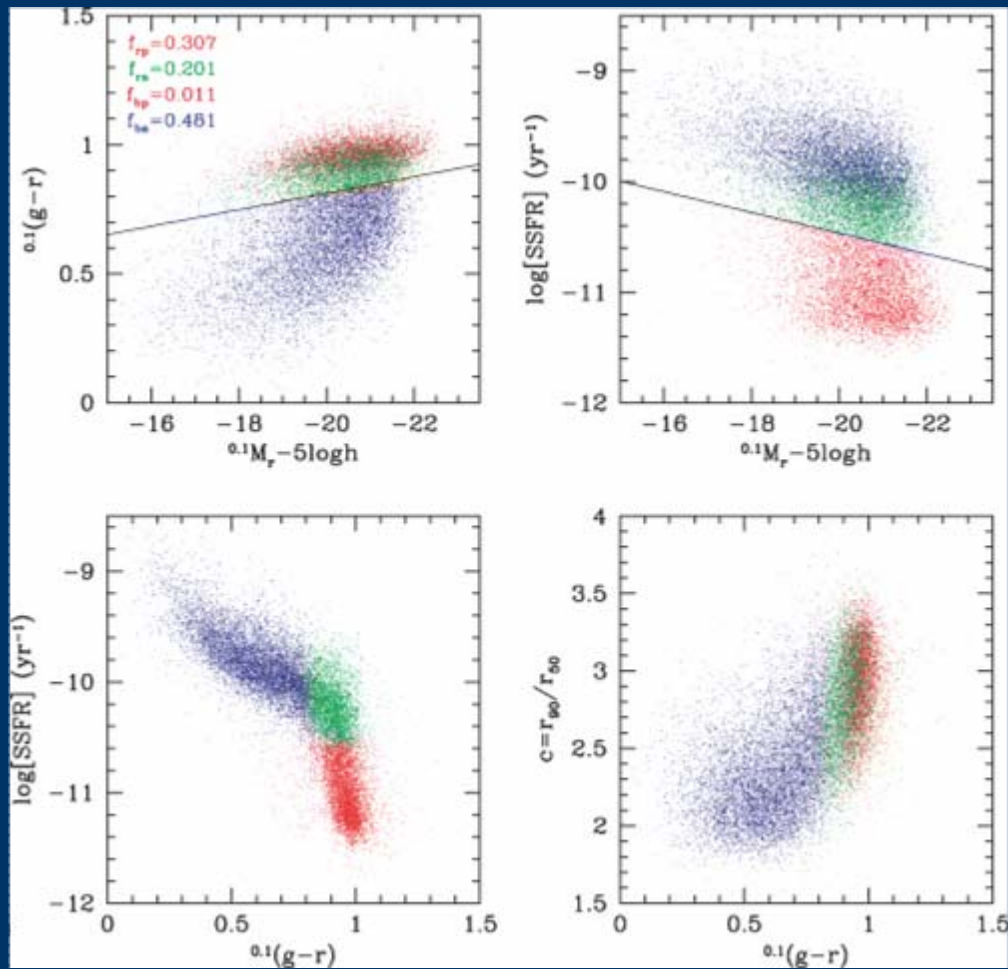


Characteristics of groups & clusters

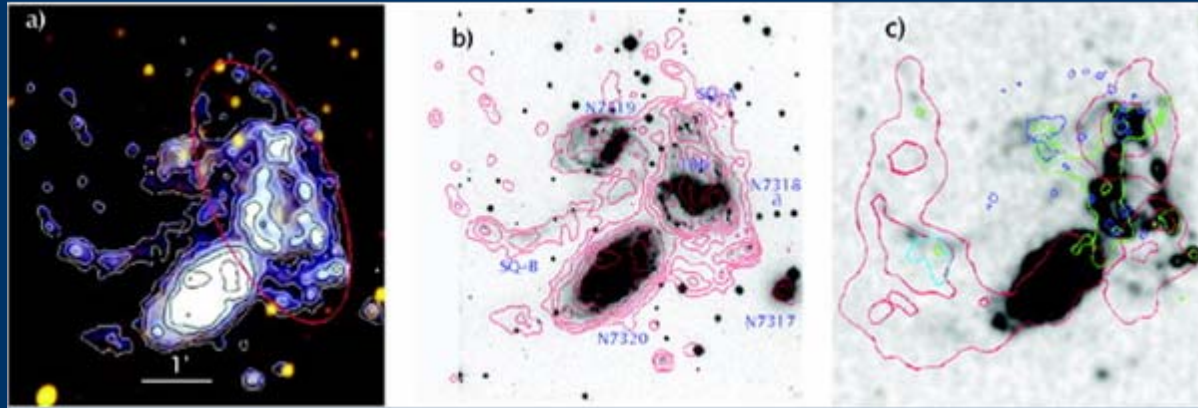
- . Morphology – Density :
 - Decrease in spiral population with increase in local density of galaxies - corresponding increase in ellipticals and spheroidals
- . Characteristic mass and size
 - from SDSS data (Hansen et al 2005, Weinmann et al 2006)
- . Luminosity segregation – member galaxies are on average more luminous and redder than in the field (Girardi et al 2003, Postman & Geller 1984)



CM diagram, Star formation rate & morphology – Weinmann et al 2006



Stephen's Quintet – Xu et al 2005 Ap J 619, L95



FUV + NUV

FUV on B band

FUV + H_a (green) + HI (red) + CO (blue)

FUV contours 25 to 28 mag/arcsec²

Shock front (~ 40 kpc) between 7319 and 7318b – radio and X-ray. An old intruder (7320c) stripped most of the gas from group members, and a new intruder (7318b) is currently colliding with this gas and triggered the large-scale shock. The UV emission associated with 7318b is found in a very large (80 kpc) disk, with a net SFR of $3.37 \pm 0.25 M_{\text{yr}}^{-1}$. Several large UV emission regions are 30-40 kpc away from the nucleus of 7318b

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Deep Imaging with UVIT

- few “benchmark” rich clusters
- Sample of blue compact groups
- Sample of 'red' groups

Thank You

