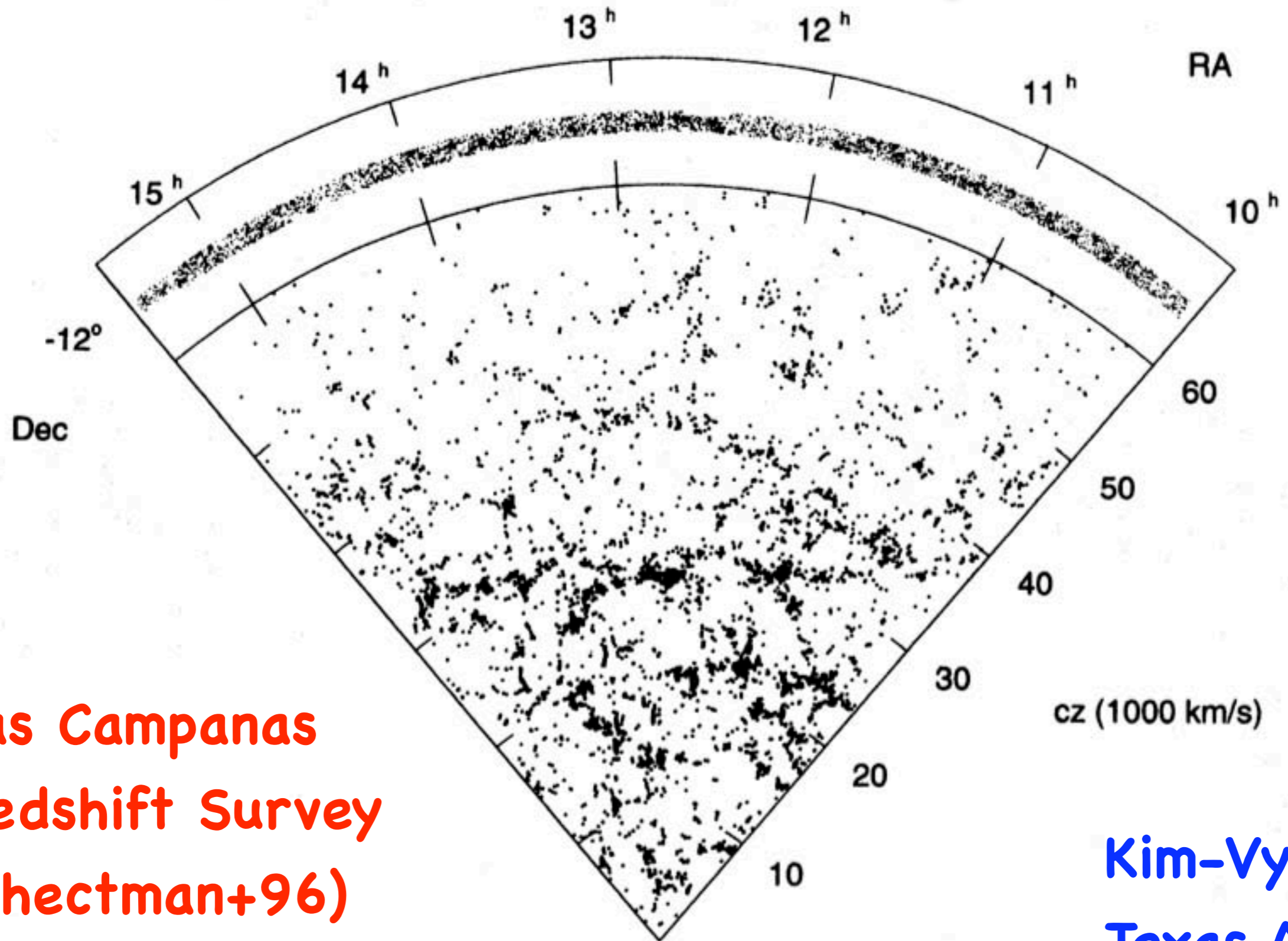


Galaxy Clusters, Groups, & LSS



Las Campanas
Redshift Survey
(Shectman+96)

Kim-Vy Tran
Texas A&M

FIG. 8c

Las Campanas Redshift Survey

2.5m telescope
26,000 galaxies
700 sq. degrees
1.5°x80° strips (6)
340–670 nm
Fibers
R-band imaging
mean $z \sim 0.1$

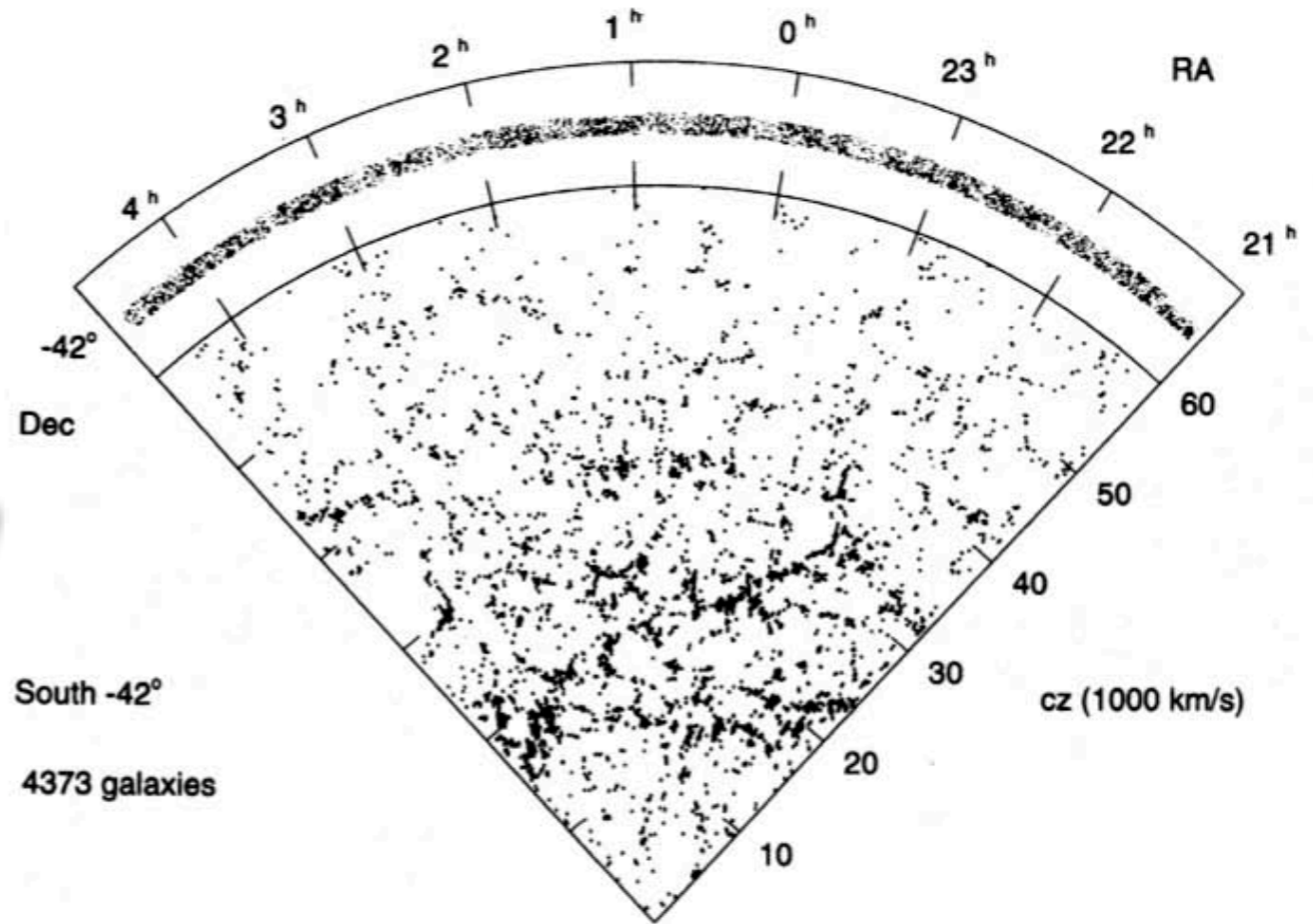


FIG. 8e

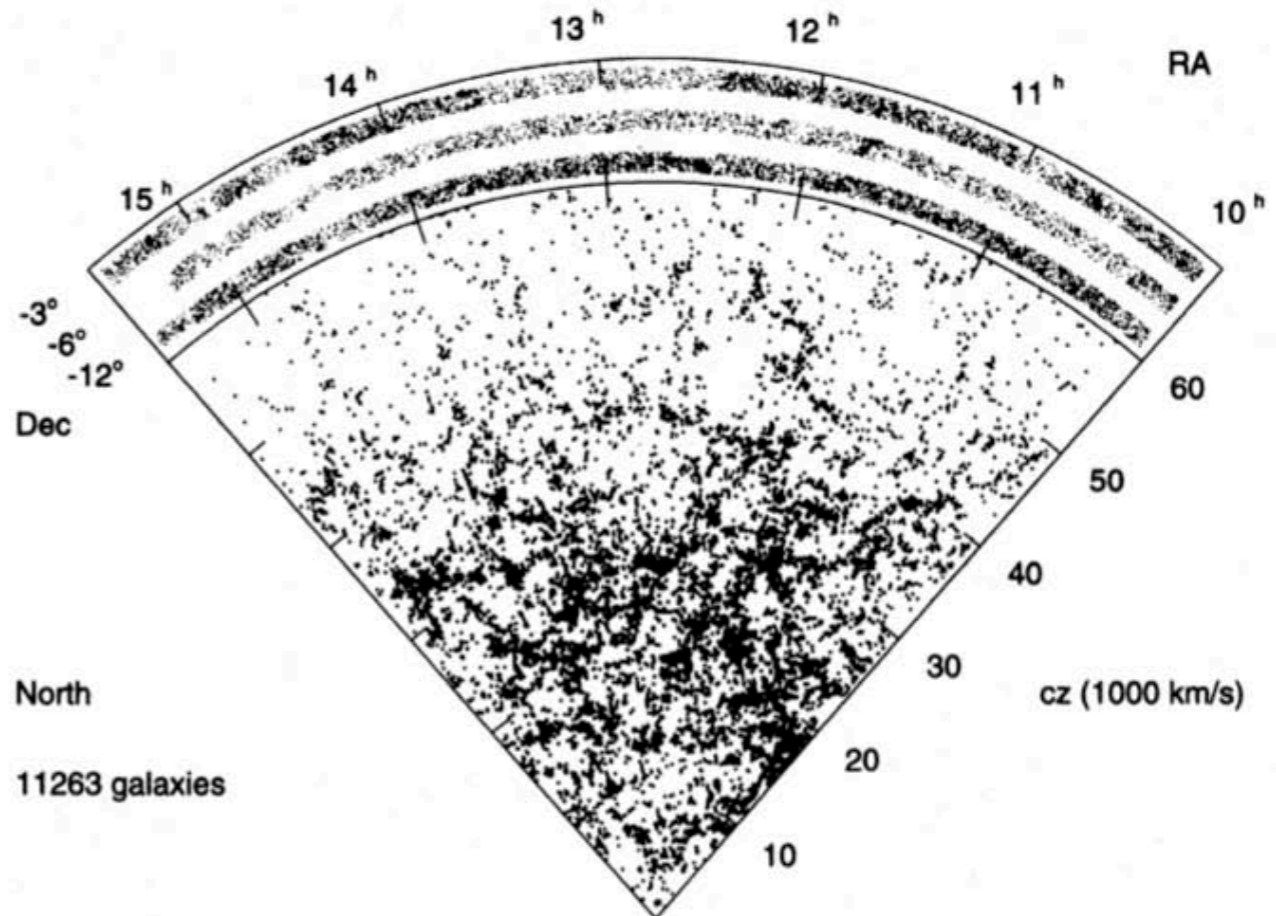
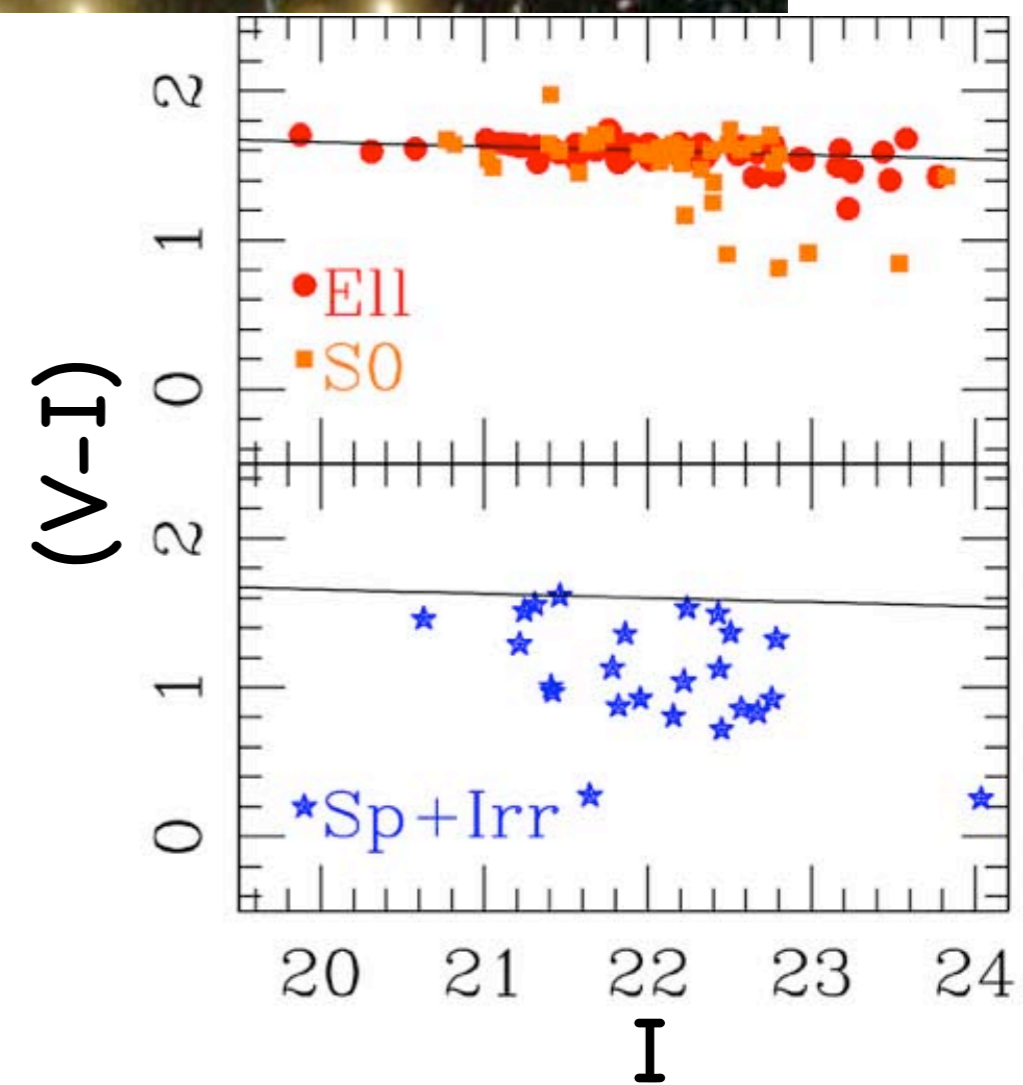


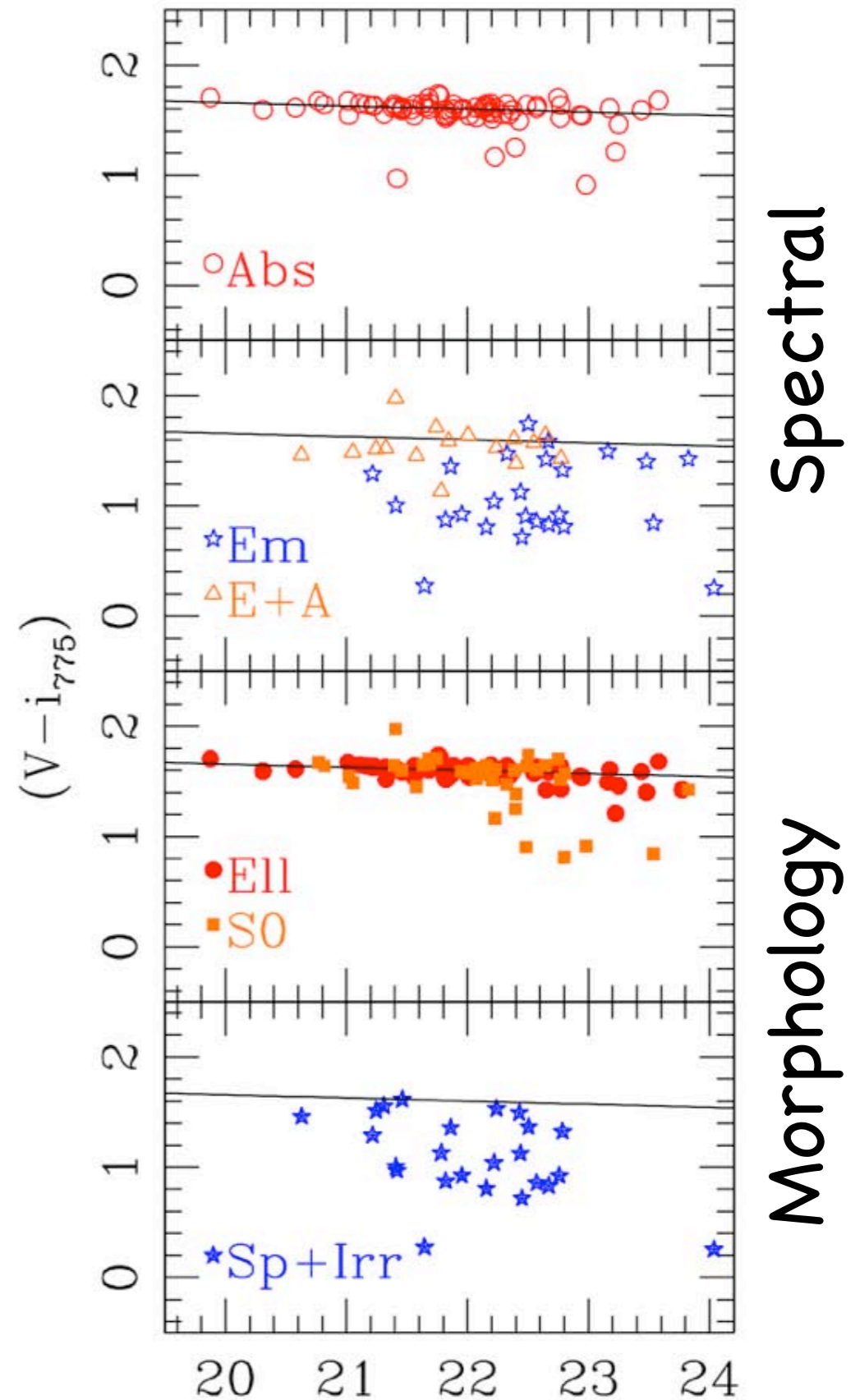
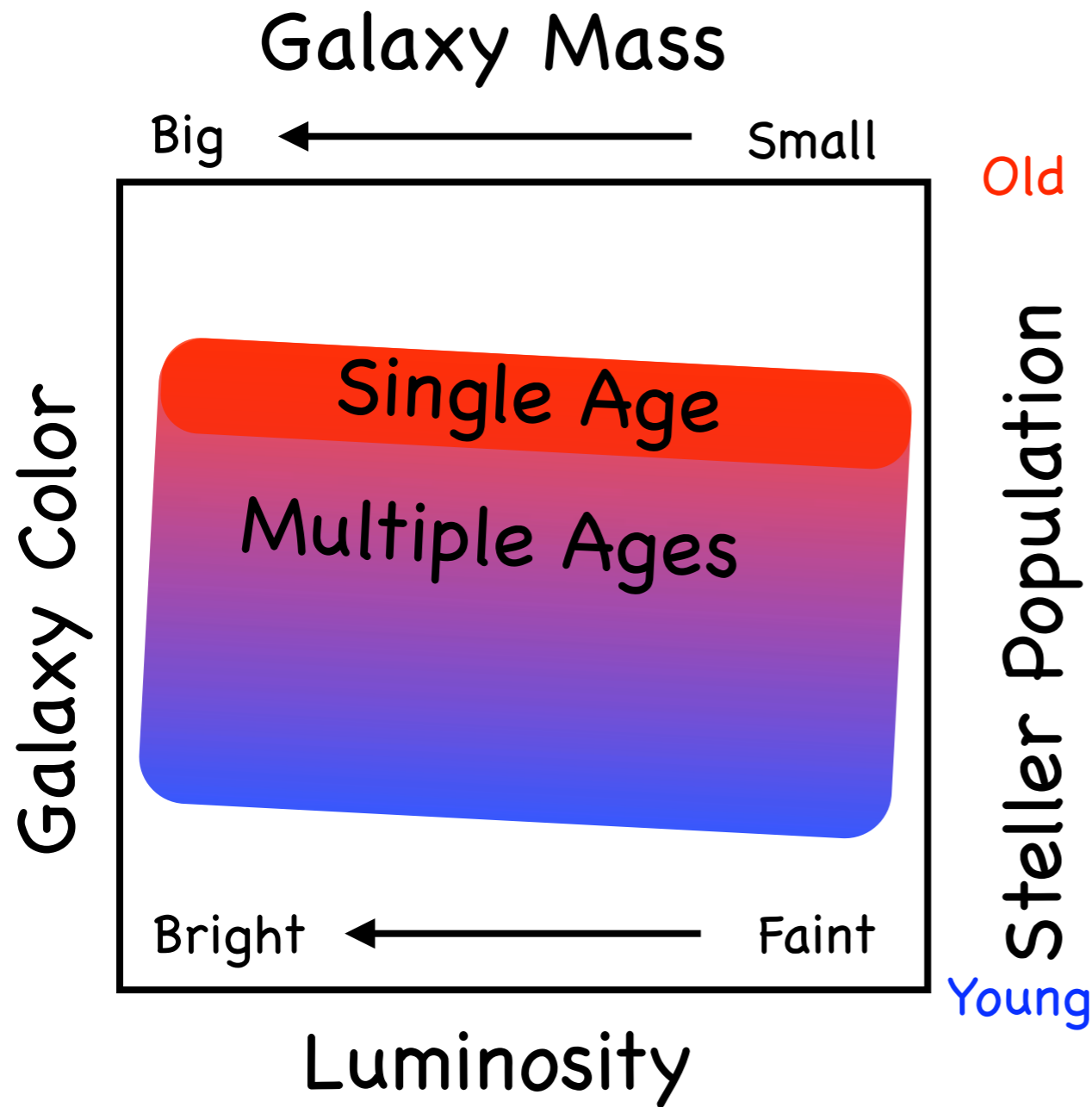
FIG. 8g

Galaxy Clusters $0 < z < 0.55$

Abell 1689 ($z=0.183$)



Galaxy Clusters $0 < z < 0.55$



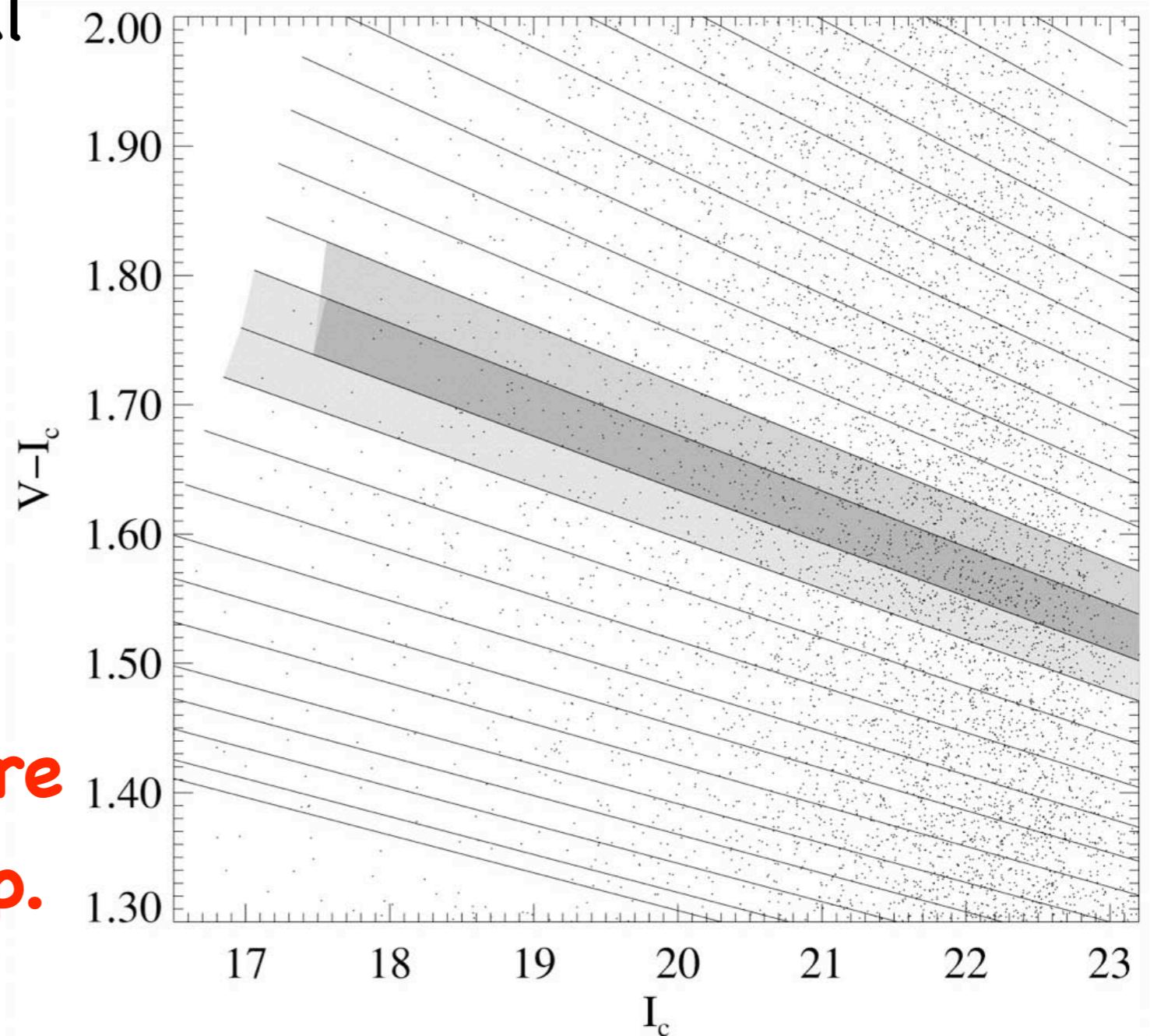
Galaxy Clusters $0 < z < 0.55$

Finding Galaxy Clusters:

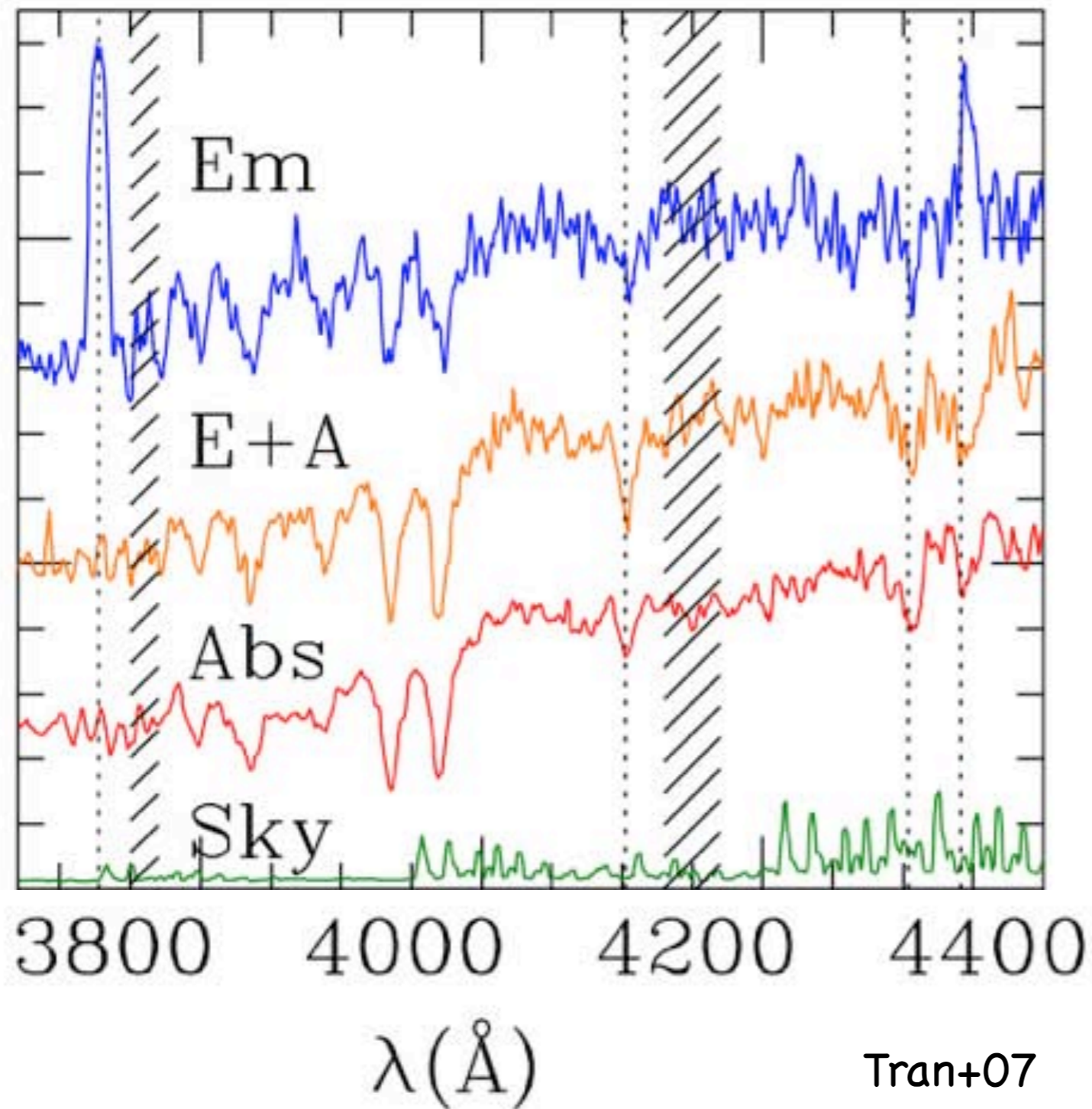
- optical overdensities (friends of friends)
- extended X-ray signal
- Sunyaev-Zeldovich

Red-Sequence Method
(Gladders & Yee)

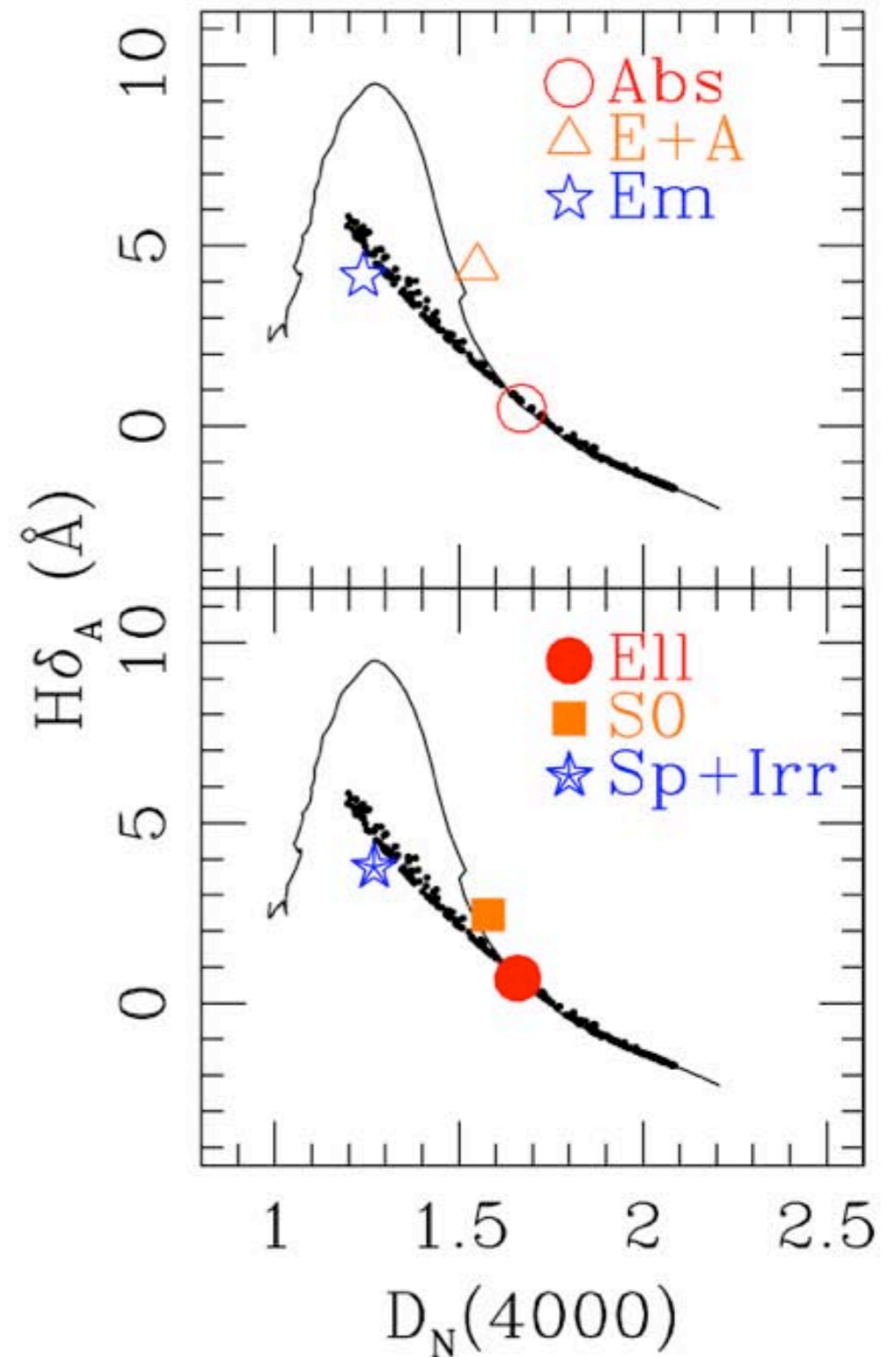
All methods still require
spectroscopic follow-up.



Galaxy Clusters $0 < z < 0.4$



Tran+07



Galaxy Groups $0 < z < 0.55$

CNOC2 Galaxy Groups ($0 < z < 0.55$):

Identified ~200 group candidates in 1.5 sq. degrees

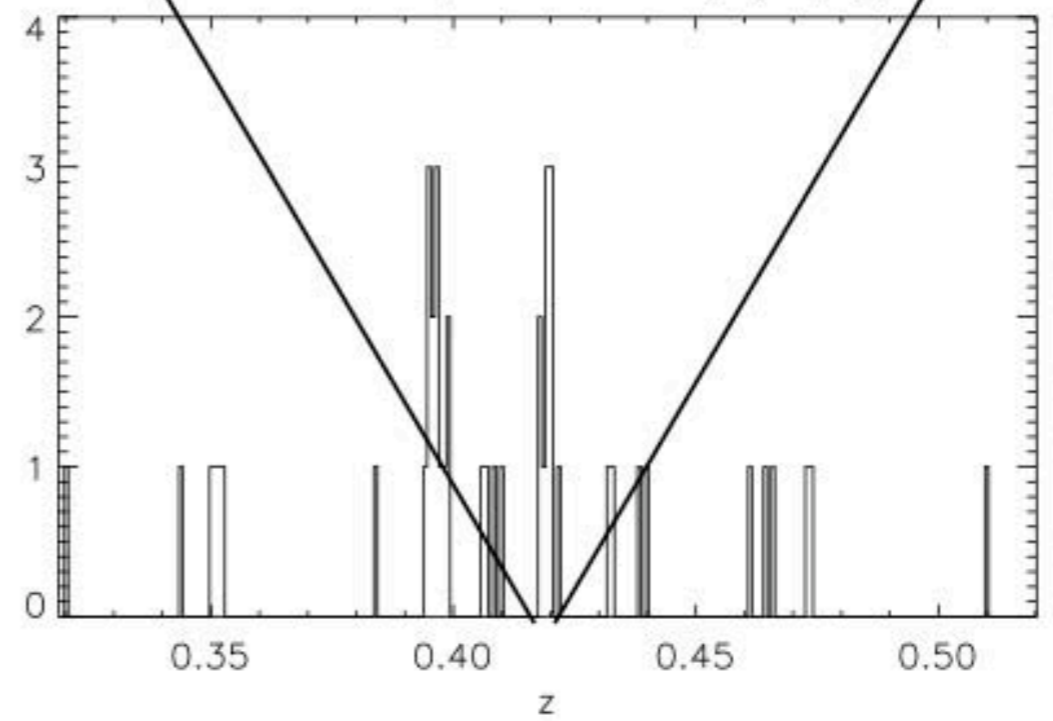
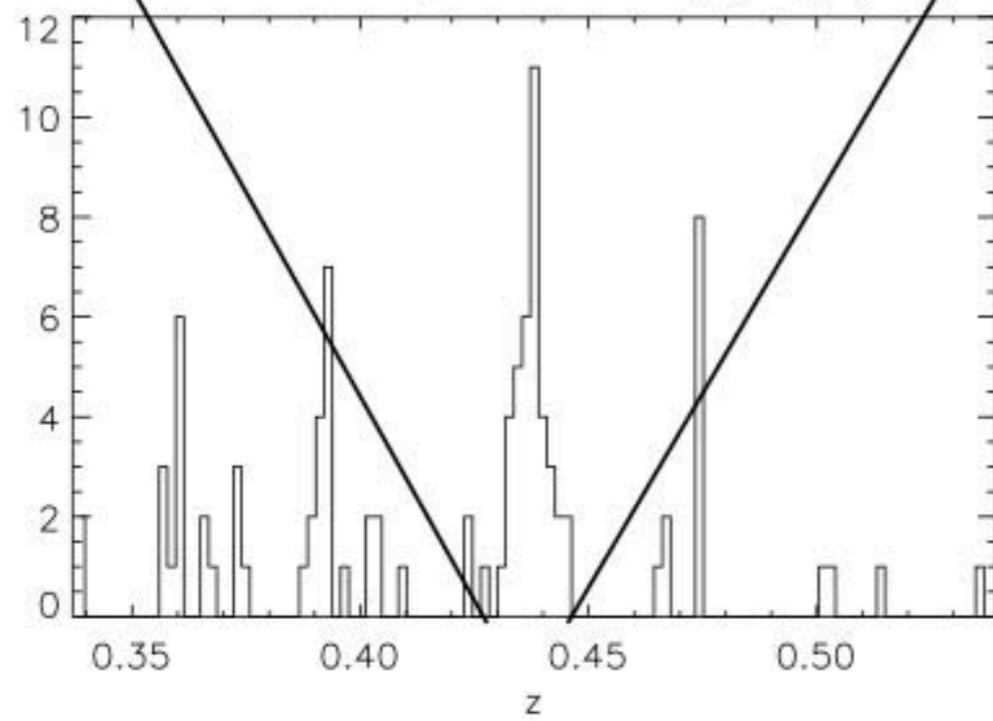
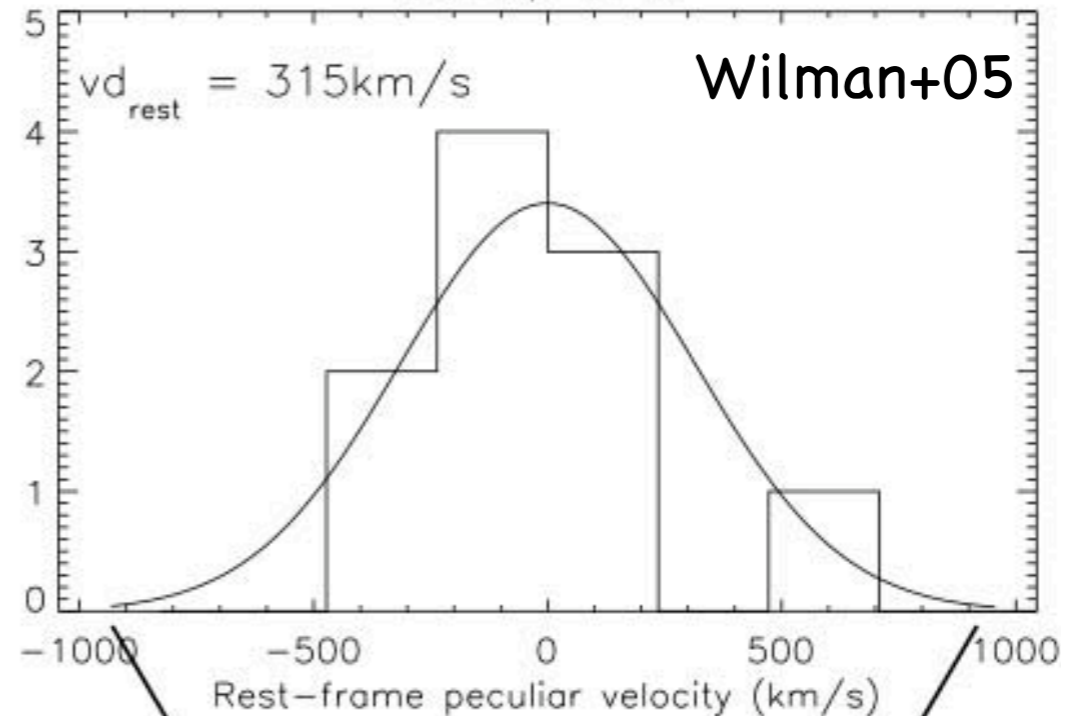
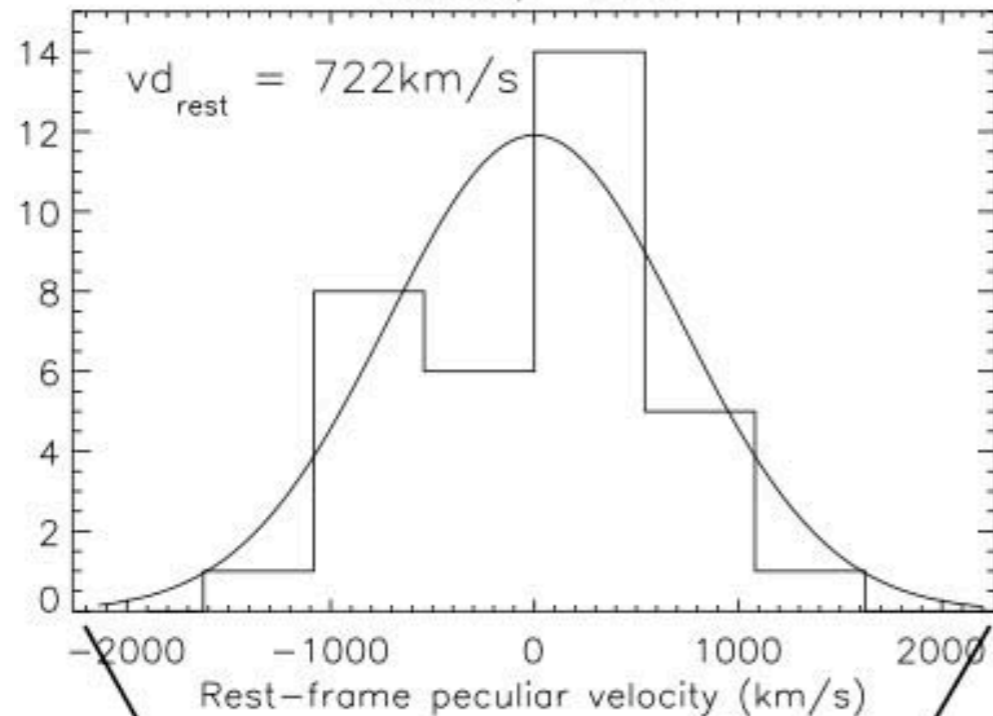
Wilman+05:

Targeted 20 groups
($0.3 < z < 0.55$) for extensive
spectroscopic follow-up
to find relatively sparse
group members

Low- z example
Not representative!



Galaxy Groups $0 < z < 0.55$



Expect ~30,000 Galaxy Groups in DEX

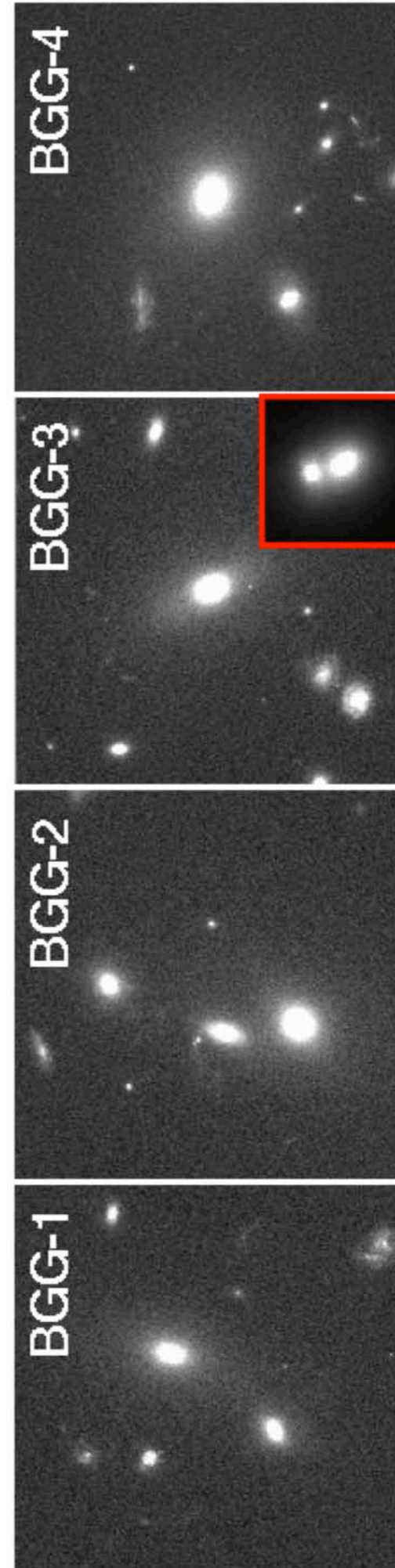
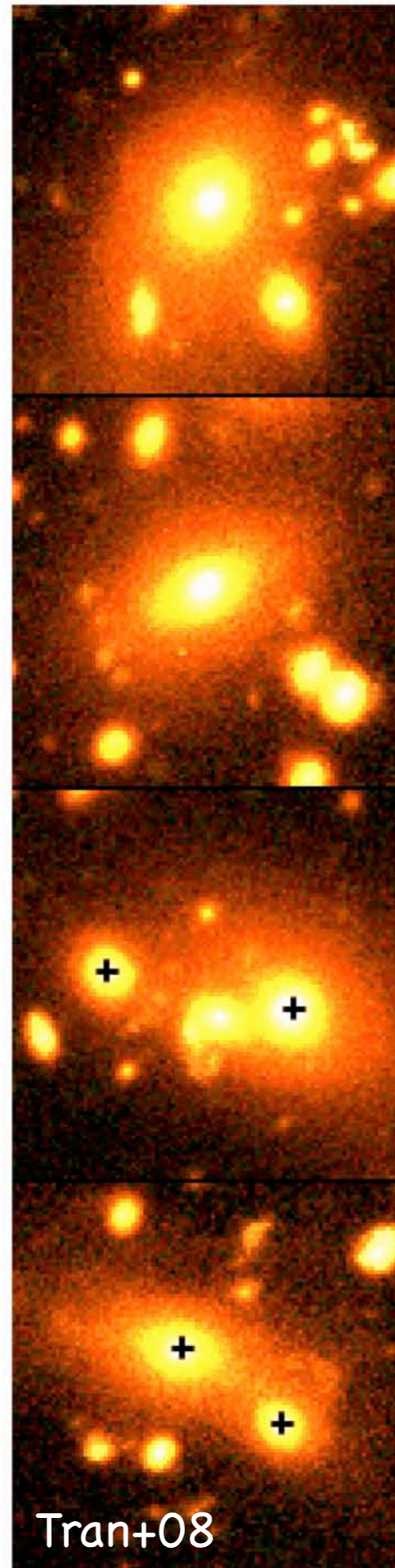
SG1120 ($z=0.37$)

2

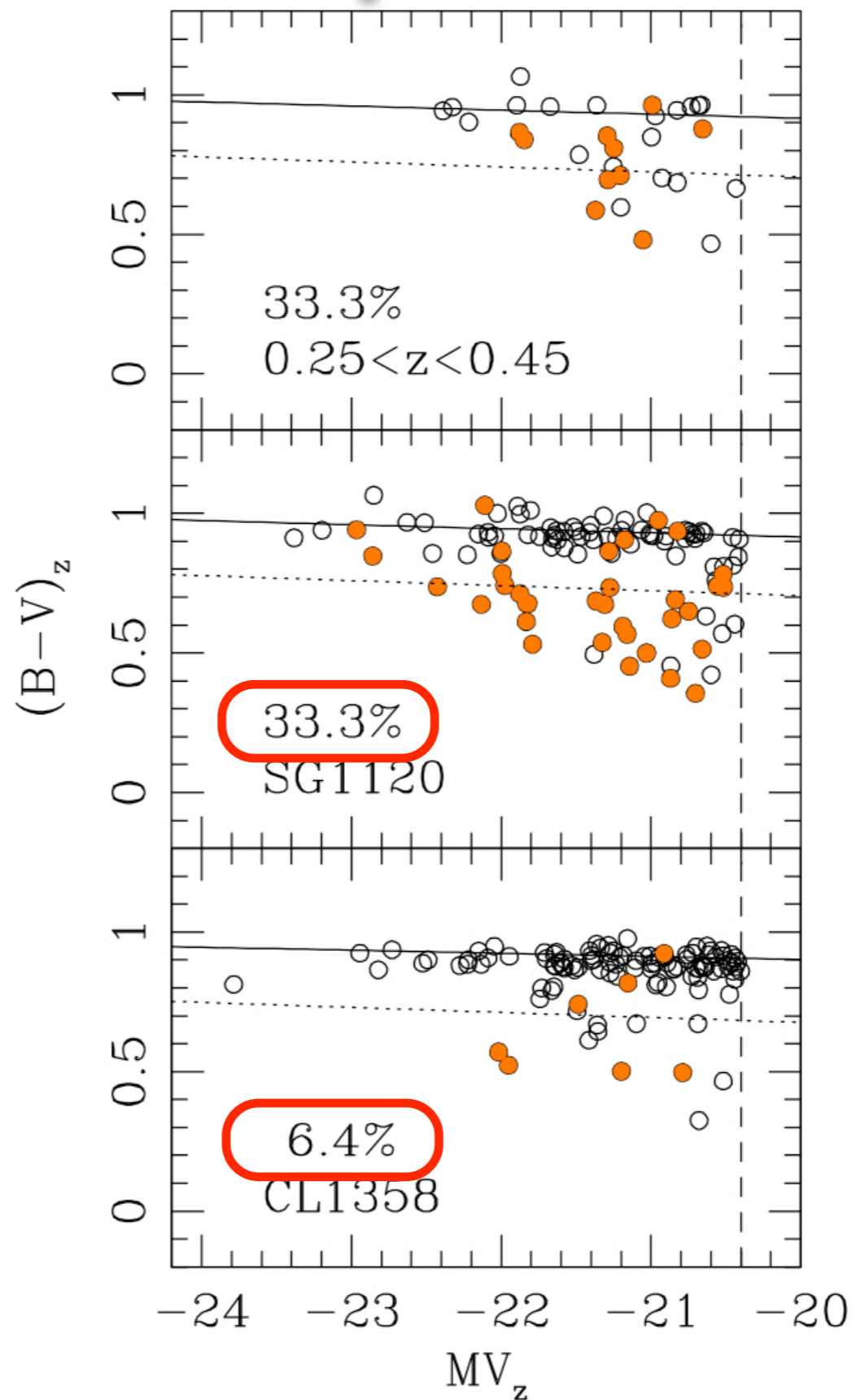
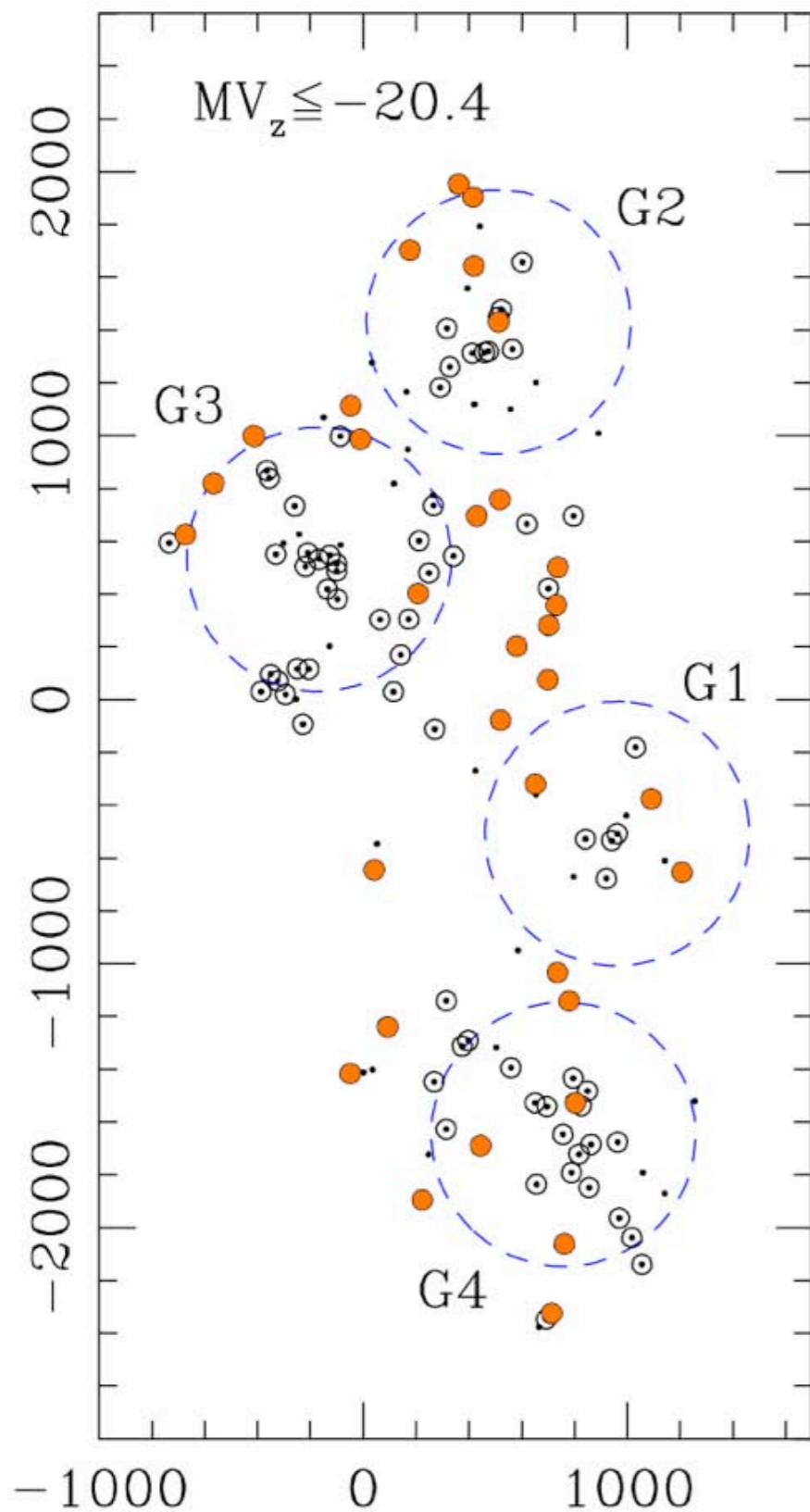
3

1

4



Galaxy Groups $z \sim 0.37$



**IR-bright
Members:**
>5 times
the number
compared
to clusters

Large Scale Structure

CL0016 ($z=0.55$)

Tanaka+08

Photo- z 's (dots) &
Spectroscopic- z 's (open)

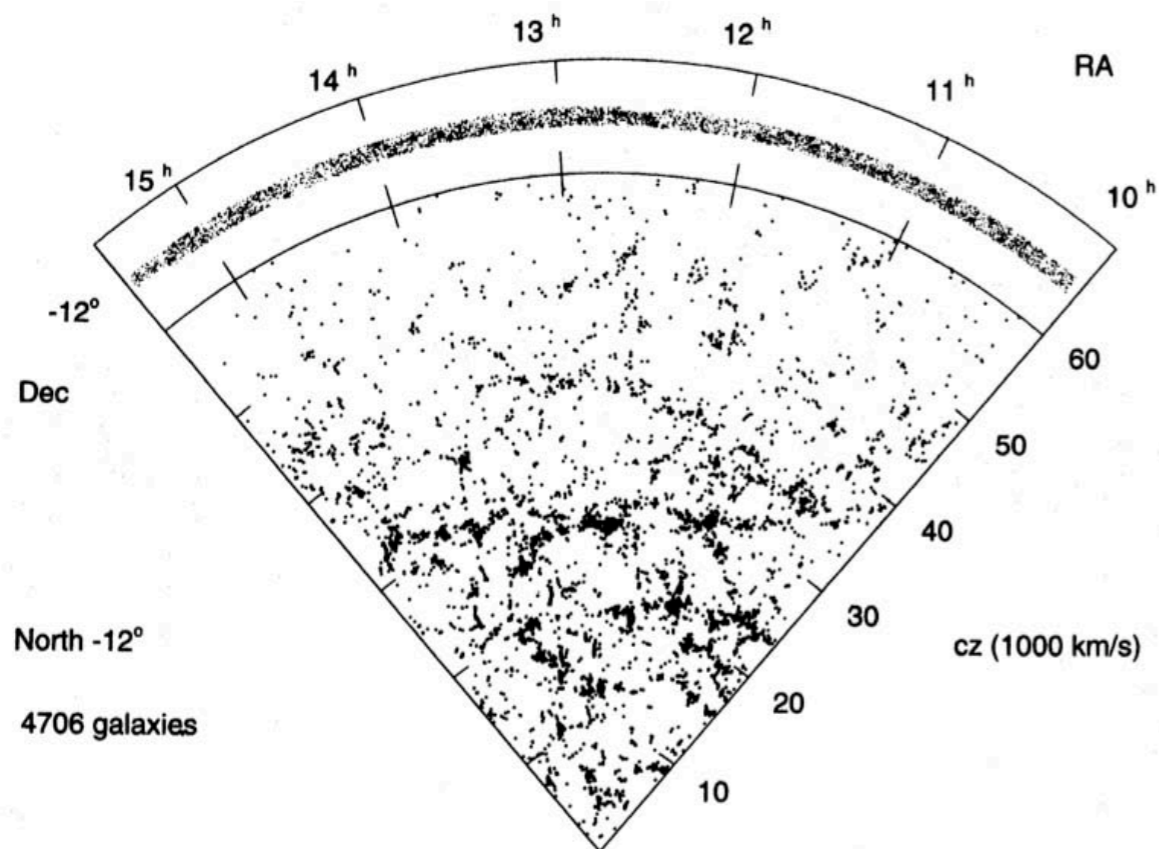
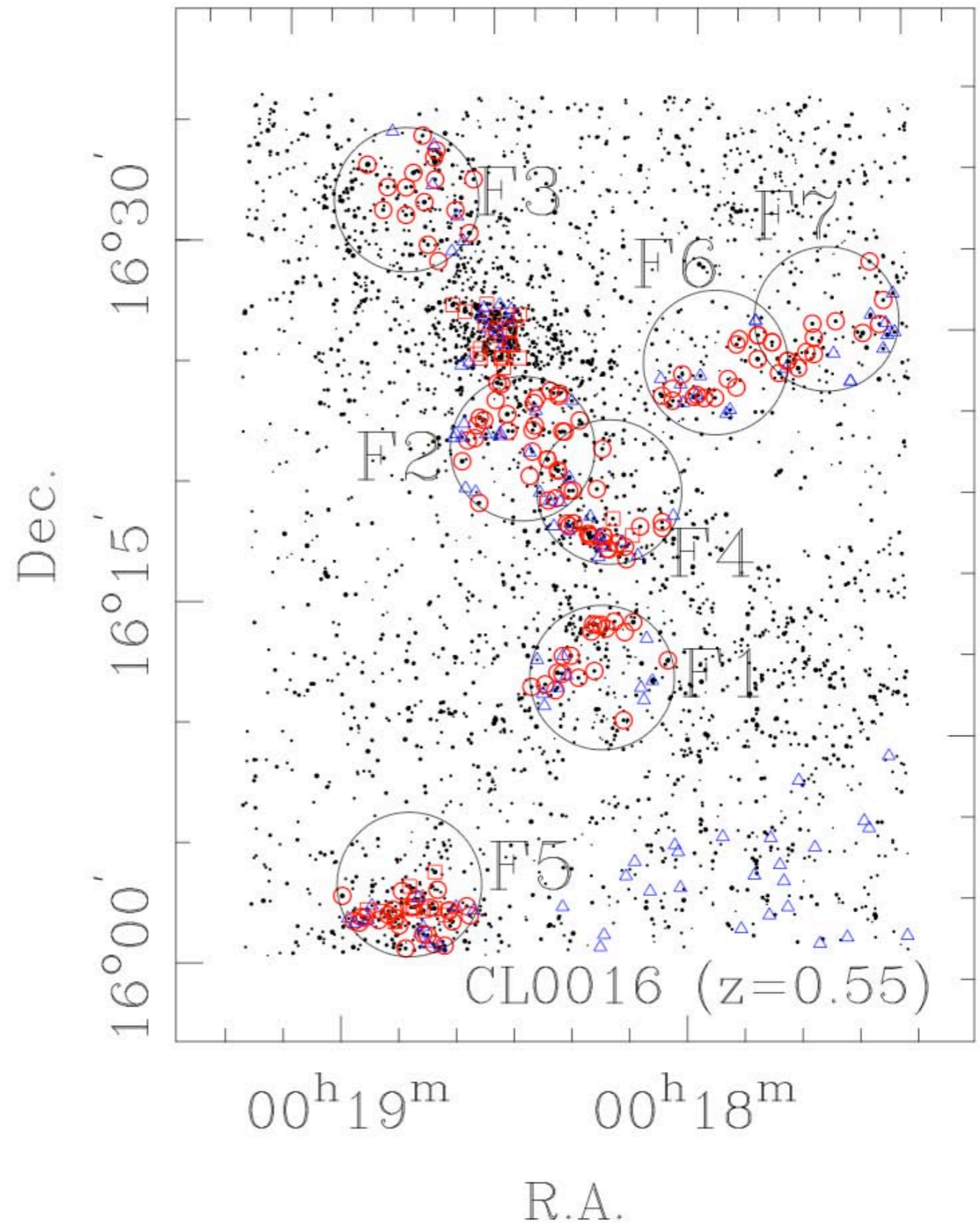


FIG. 8c



Summary

Super Groups/Clusters

>2,000 Massive Galaxy Clusters ($>10^{14}$ Msun)

>30,000 Galaxy Groups ($>10^{13}$ Msun)

Identify via redshift peaks

Blind survey = no color/morphological bias

2-color photometry useful but not critical

Transformation of active to passive galaxies

Galaxy populations (local density)

Stellar ages (spectral)