



Revisiting Fornax UCDs

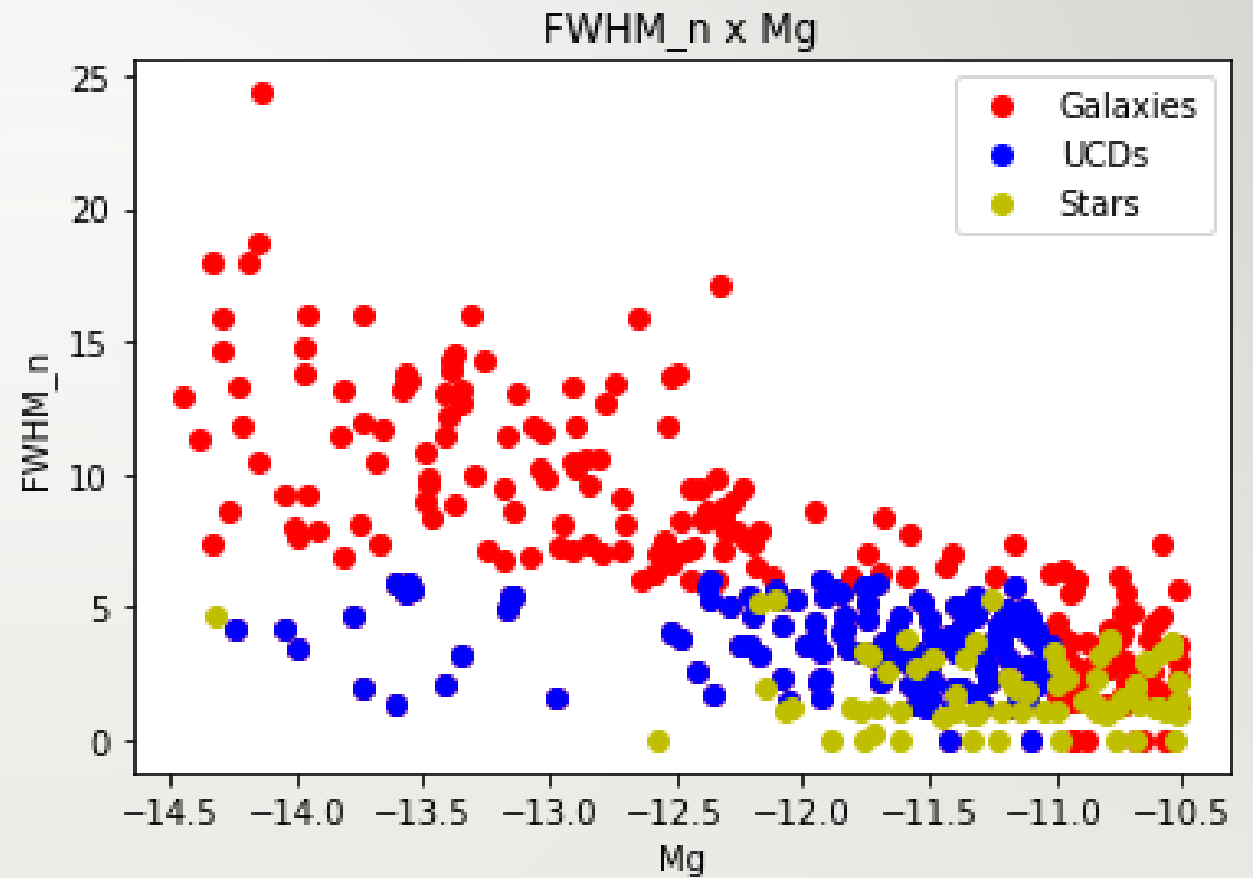
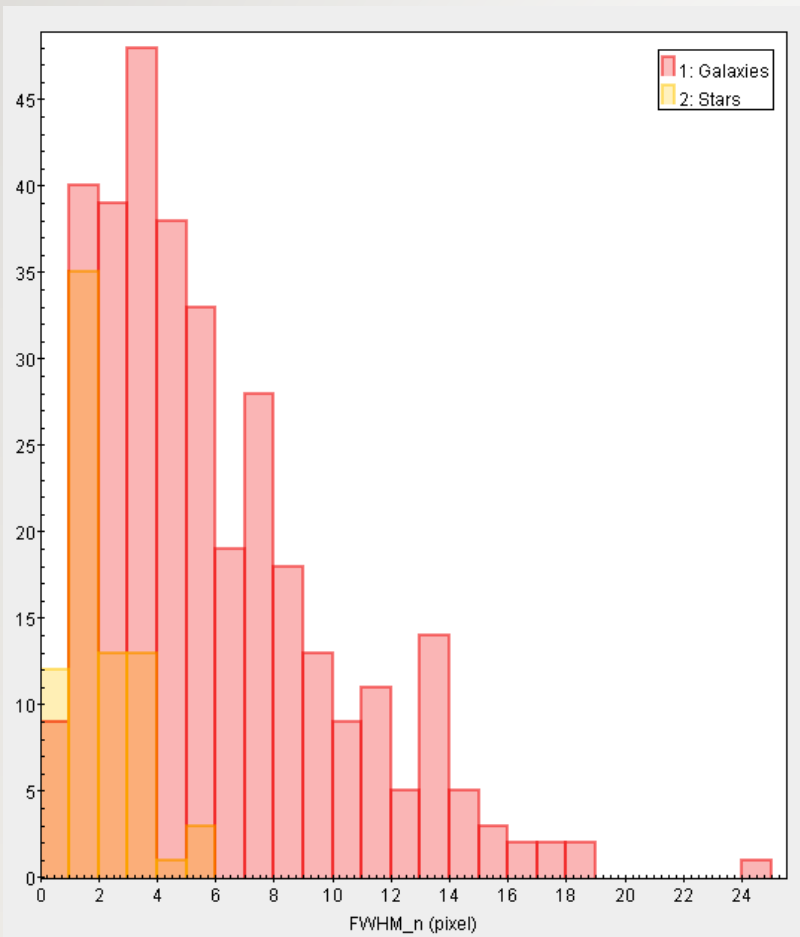
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Galaxy selection criteria

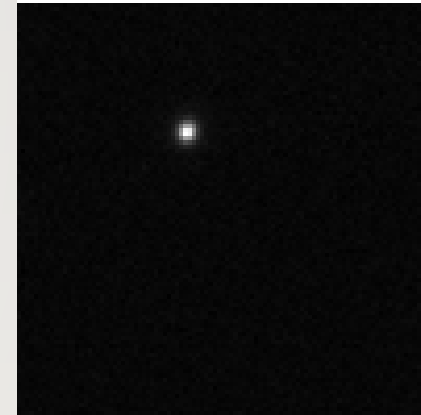
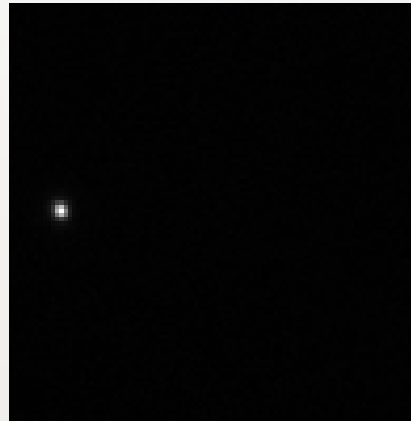
- Catalog: Fornax_Sample_3arcsec_pz_zs_class_xmatchv2.csv
- The new S-PLUS/DR2 photometry and star/galaxy/quasar classification
- $\text{PROB_GAL} > 0,5$
- $-14.5 < \text{Mg_petro} < -11$
 - Focus on dwarf galaxies
 - $\text{Mg} = \text{G_petro} + \text{DM}$
 - $\text{DM} = 31.51$

UCDs: galaxies with $\text{FWHM}_n < 6$



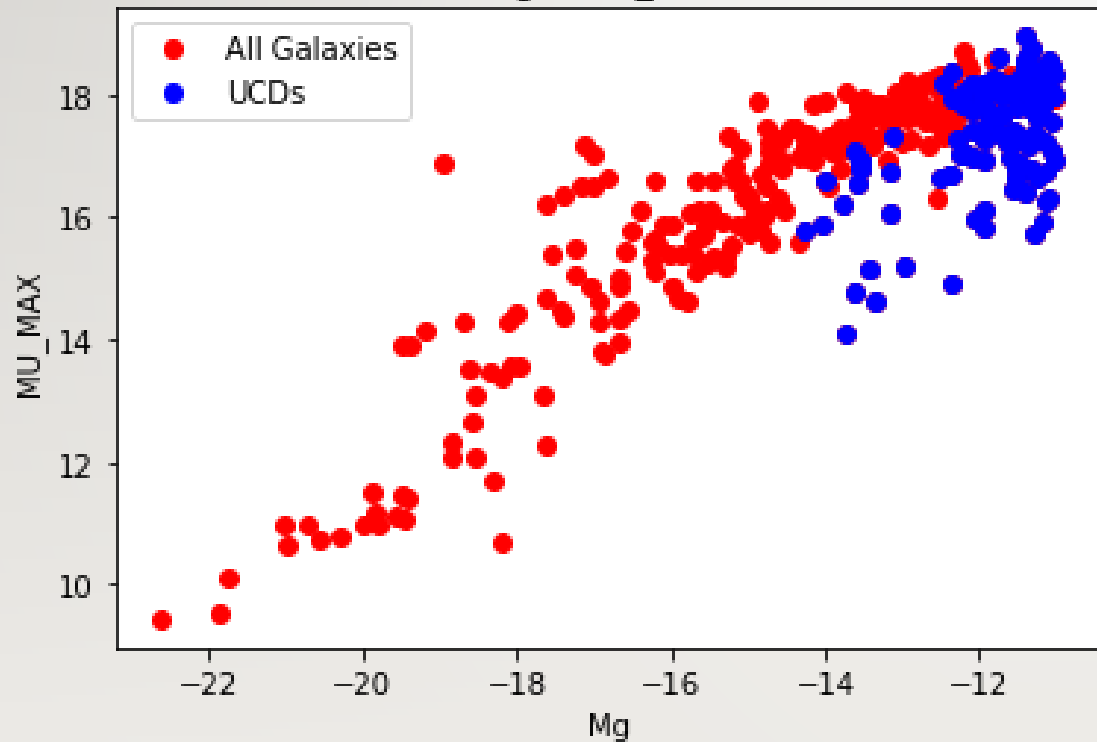
UCDs galaxies

- Ultra compact dwarf galaxies
- Small objects with high stellar density
 - Difficult to distinguish from globular clusters
 - GC dominate for $M_g > -11$
- Formation process poorly known
- Our sample: 134 candidates

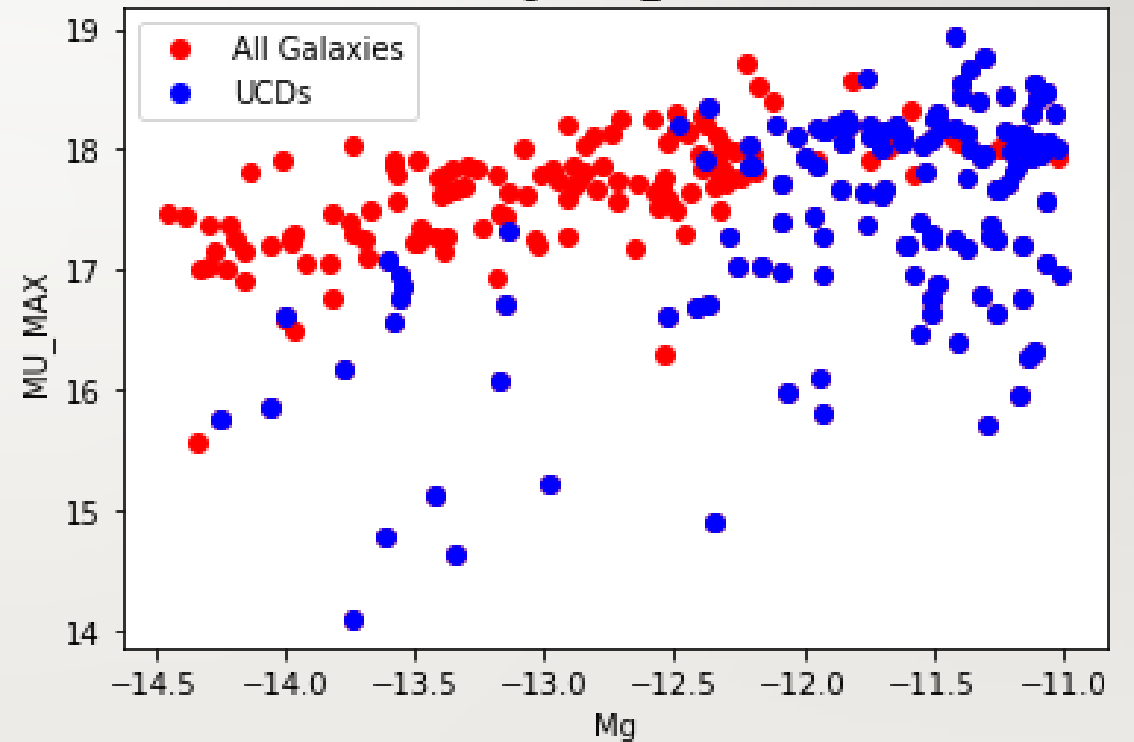


Two dwarf families: high and low central surface brightness

Galaxies brighter the $M_g = -11$
 $M_g \times \mu_{MAX}$

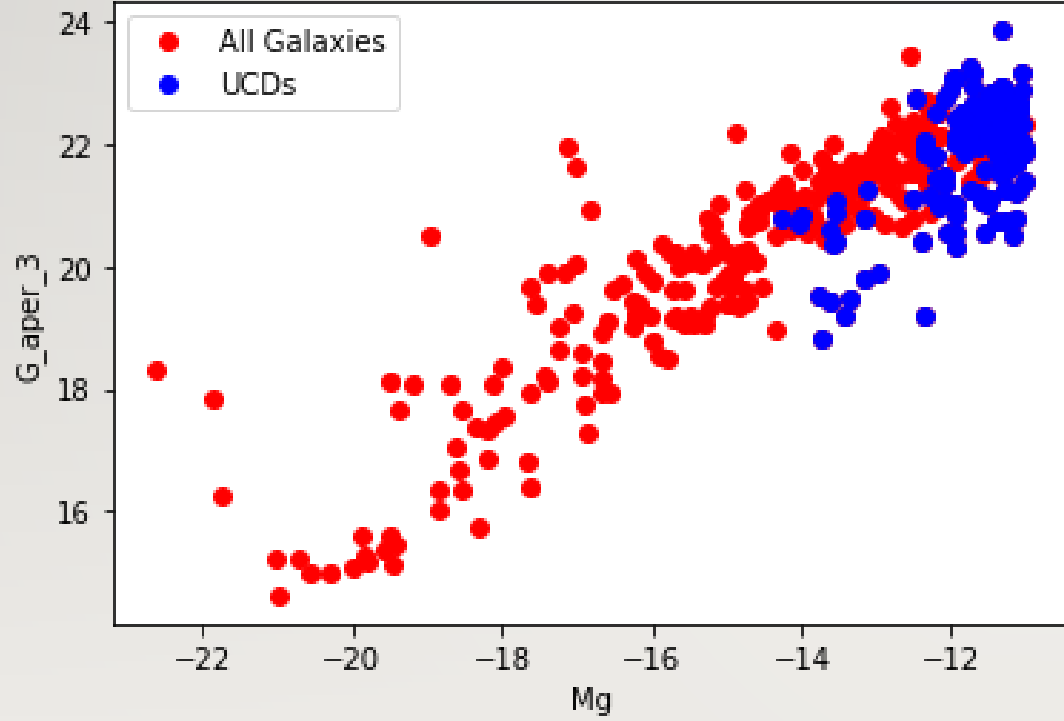


In the selection range
 $M_g \times \mu_{MAX}$

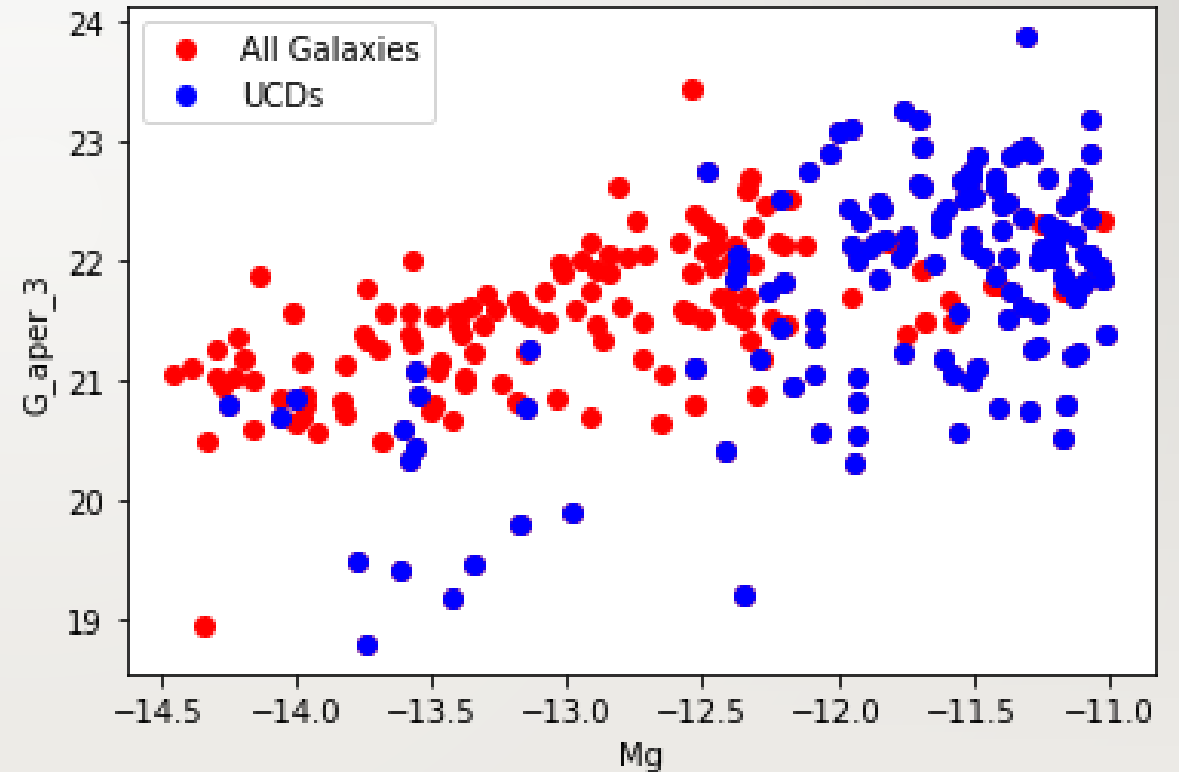


Two dwarf families high and low central surface brightness

Galaxies brighter the $M_g = -11$
 $M_g \times G_{aper_3}$

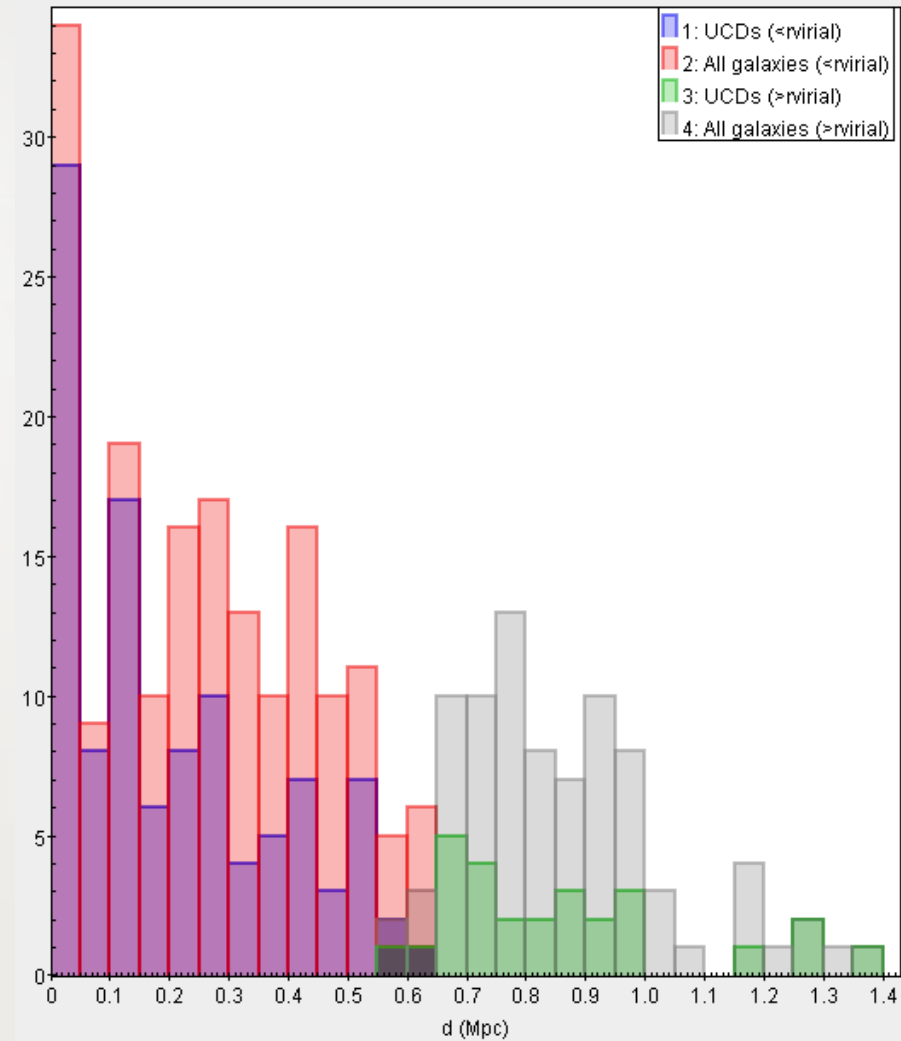
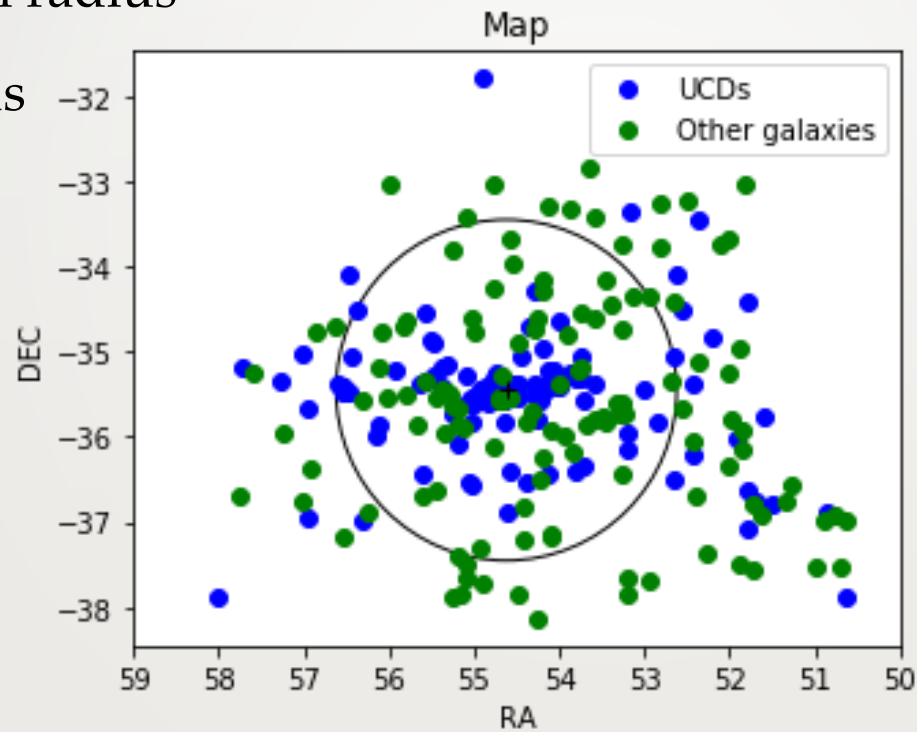


In the selection range
 $M_g \times G_{aper_3}$



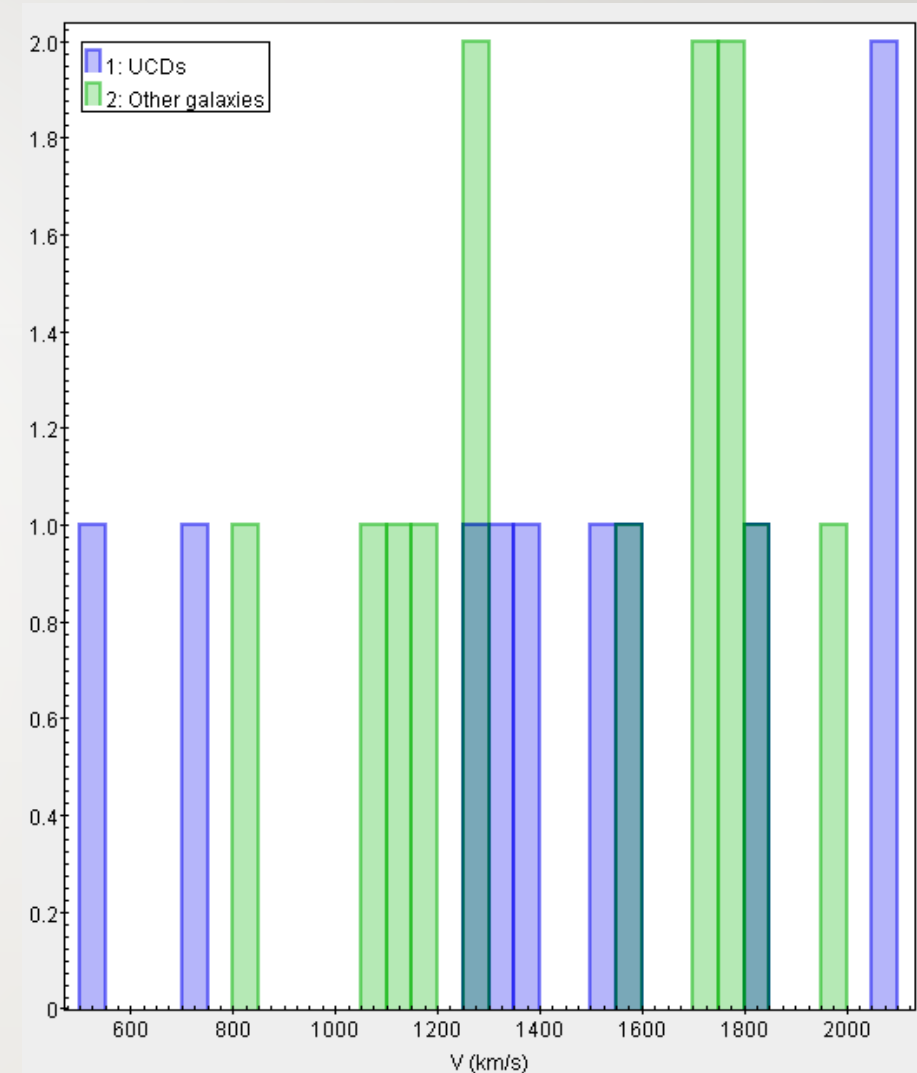
Spatial distribution

- 107 UCDs inside the virial radius
- 27 outside the virial radius (~0.7Mpc/~2 degree)

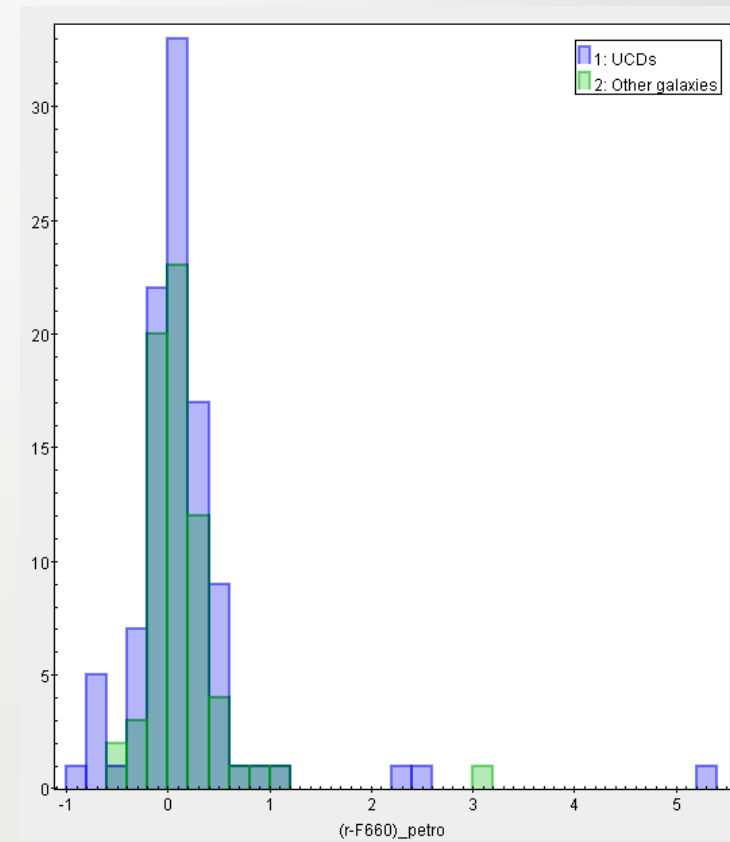
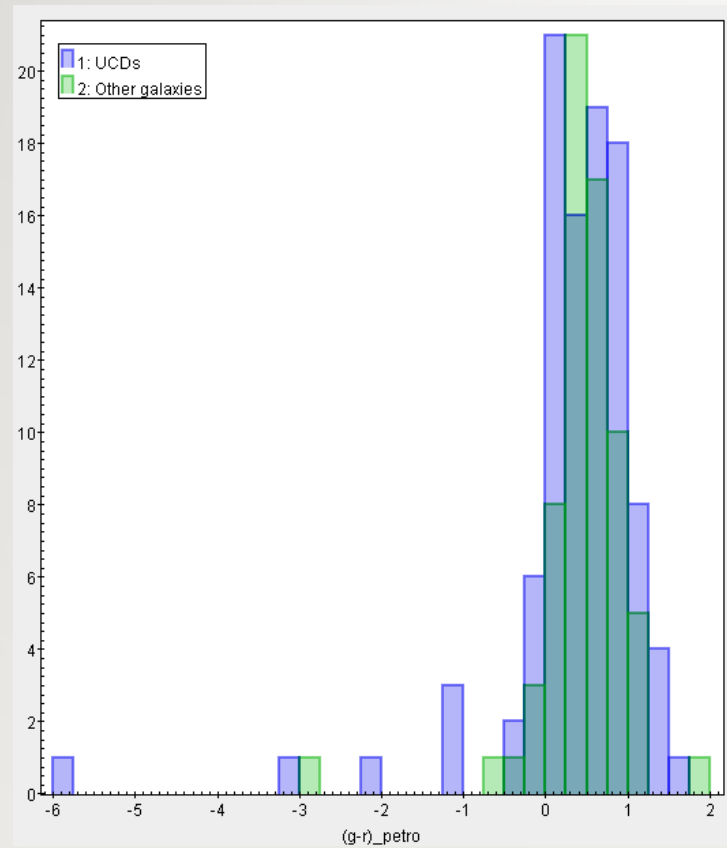


Radial velocities

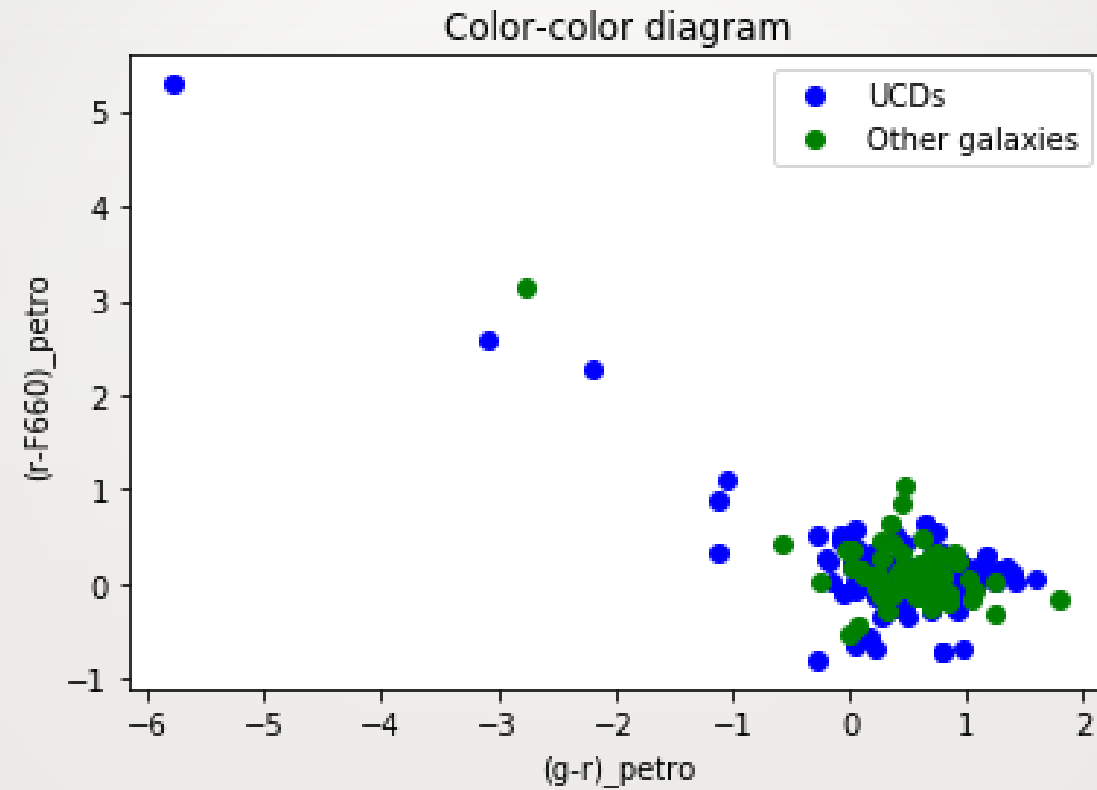
- UCDs
 - 10 have measured velocity
 - Mean radial velocity 1 437 km/s
 - Velocity dispersion 509 km/s
- Other galaxies
 - Mean radial velocity 1 478 km/s
 - Velocity dispersion 352 km/s



Stellar populations



Stellar populations

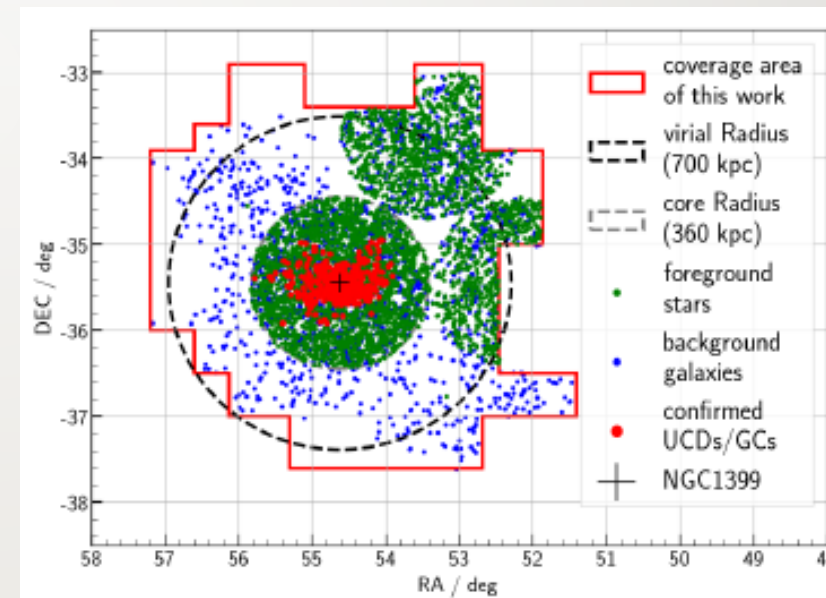


Median of distributions: galaxies with $-14.5 < M_g < -11$

- UCDs
 - M_g : -11,58 mag
 - MU_MAX : 17,64 mag
 - $FWHM_n$: 3,52 pixel
 - Projected radius: 0,14 Mpc
 - Radial velocity: 1 472 km/s
 - $(g-r)_petro$: 0,49
 - $(r-F660)_petro$: 0,09
- All dwarf galaxies
 - M_g : -12,02 mag
 - MU_MAX : 17,67 mag
 - $FWHM_n$: 4,96 pixel
 - Projected radius : 0.25 Mpc
 - Radial velocity: 1 549 km/s
 - $(g-r)_petro$: 0,73
 - $(r-F660)_petro$: 0,08

Ultra-compact dwarfs beyond the centre of the Fornax galaxy cluster: Hints of UCD formation in low density environments - arXiv:2104.00004v1

- Teymoor Saifollahi, Joachim Janz, Reynier F. Peletier, Michele Cantiello, Michael Hilker, Steffen Mieske, Edwin A. Valent, Aku Venhola, G Verdoes Kle
- April 2021
- Fornax Deep Survey (FDS)
- Objects brighter than $M_g = -10.5$ mag
- Catalog of candidates: 44 objects
 - None of them are in our catalog
- Catalog of known UCDs: 648 galaxies
 - 5 are in our catalog



Conclusion

- UCDs: galaxies with $\text{FWHM}_n < 6$
- 107 objects inside virial radius
- Diagrams $\text{Mg} \times \text{MU}_{\text{MAX}}$: two families
- Mean radial velocity: 1 437 km/s
 - Fornax mean radial velocity: 1 442 km/s
- Velocity dispersion: 509 km/s
 - Fornax velocity dispersion: 318 km/s
- No significant differences in stellar populations as probed by colors
- Only five galaxies in common with Saifollahi et al 2021
 - Catalog of known UCDs

Thank you!