

An HST Census of M31 Satellites

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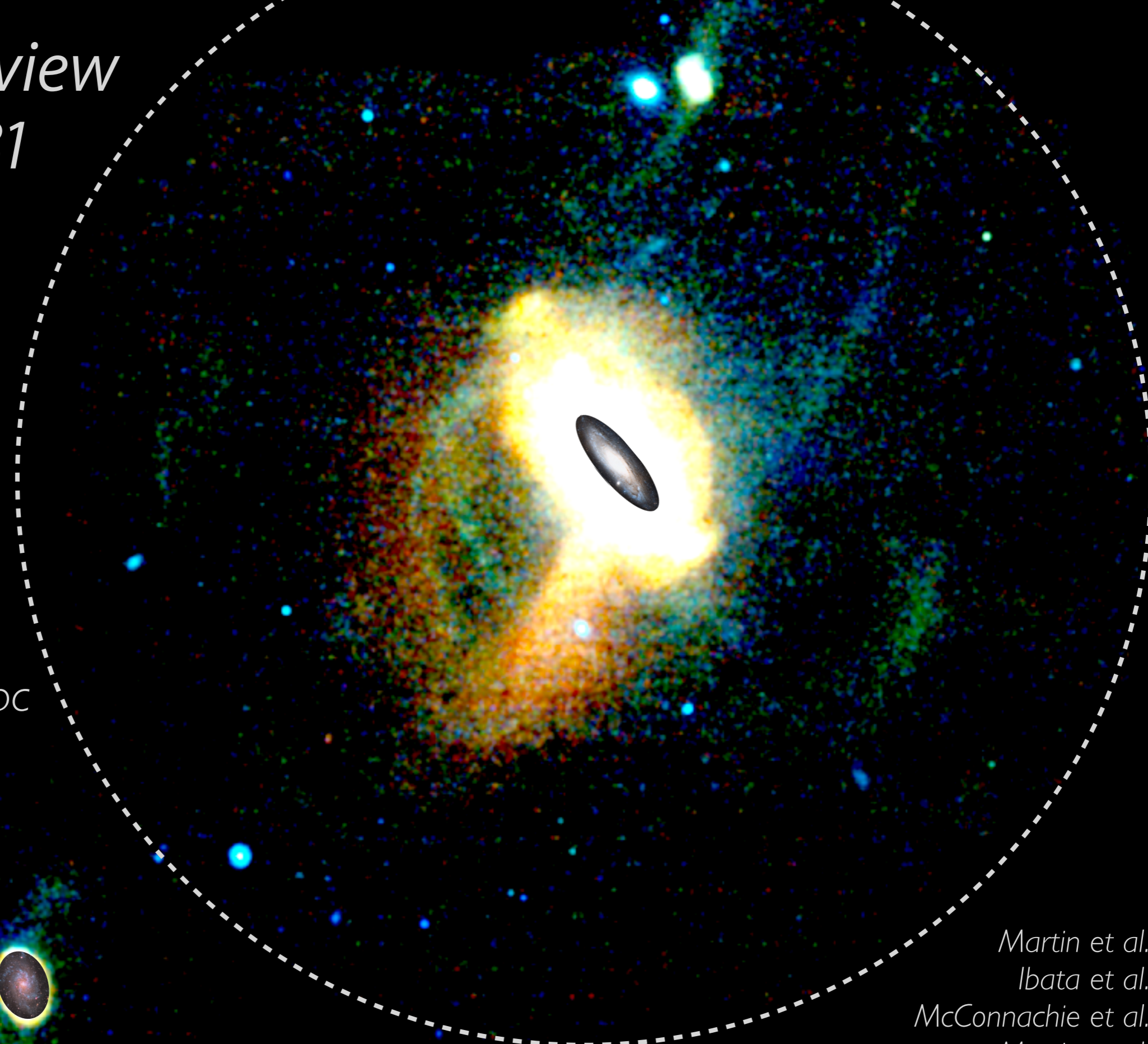
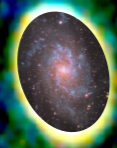
Antonio Aparicio
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Carme Gallart
Sebastian Hidalgo
Mike Irwin
Lucio Mayer

Alan McConnachie
Kristy McQuinn
Matteo Monelli
Julio Navarro
Peter Stetson

*PAndAS view
of M31*

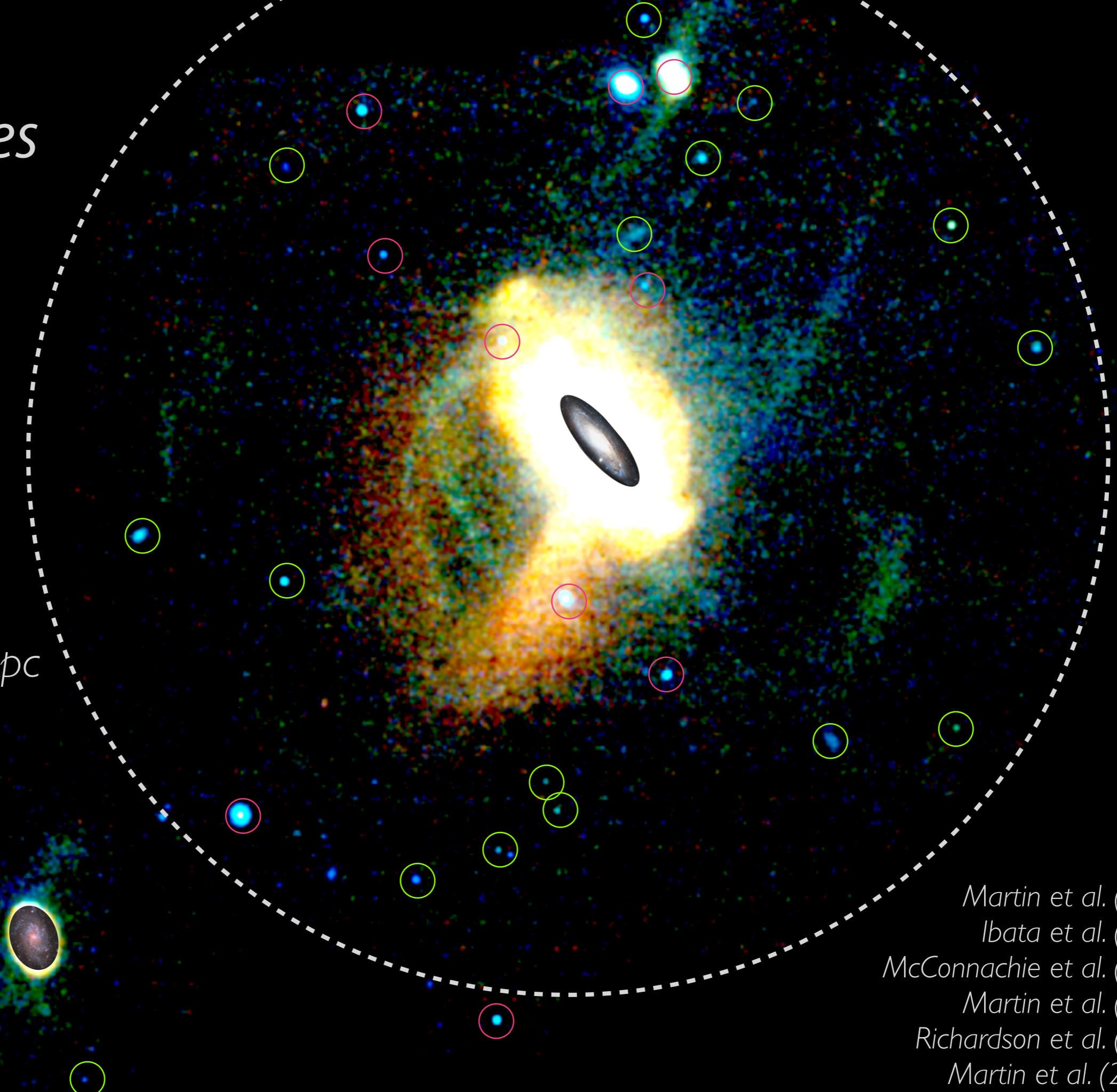
$R_{M31} \sim 150 \text{ kpc}$



*Martin et al. (2006)
Ibata et al. (2007)
McConnachie et al. (2008)
Martin et al. (2009)
Richardson et al. (2011)
Martin et al. (2013b)*

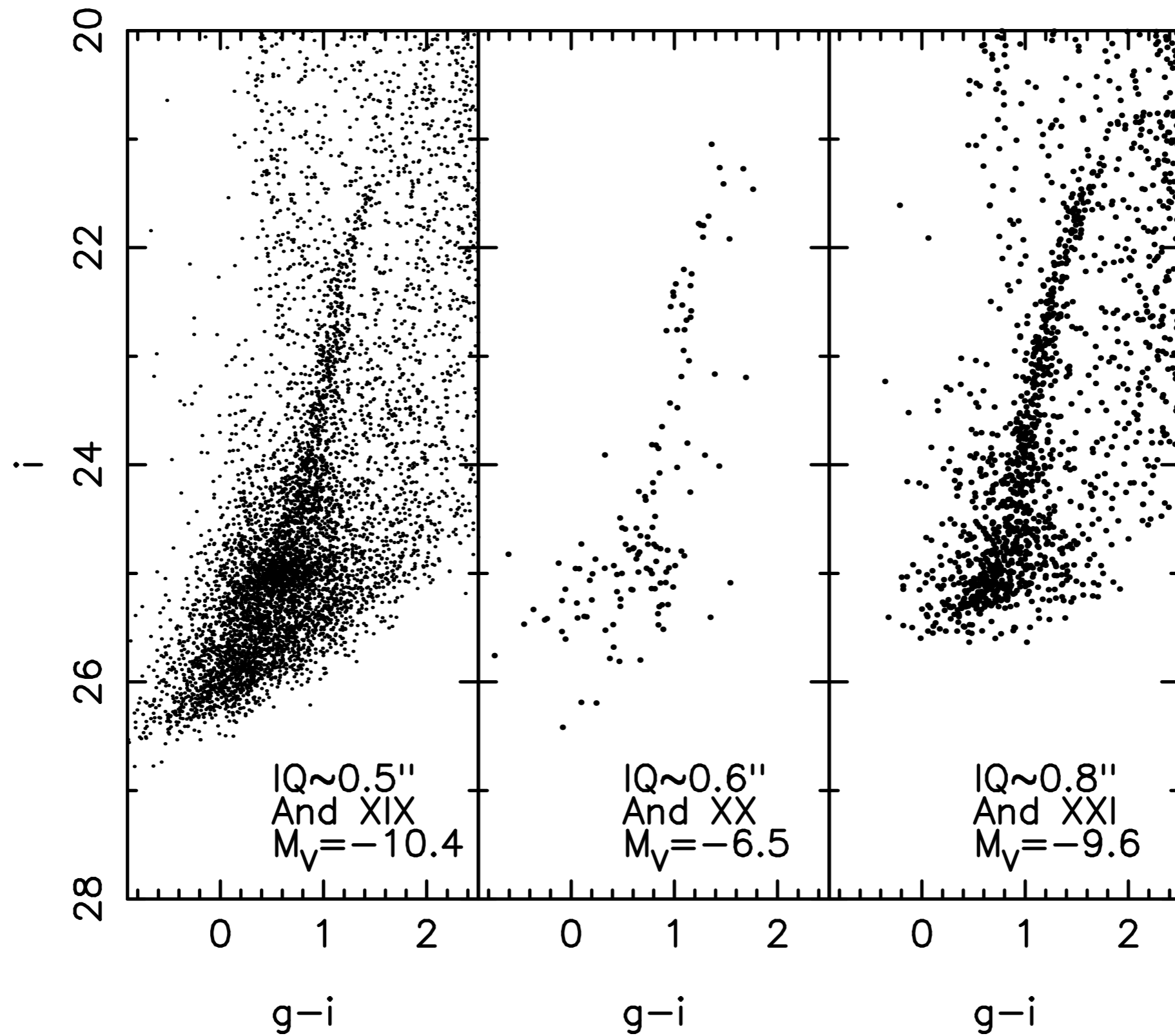
M31 Satellites

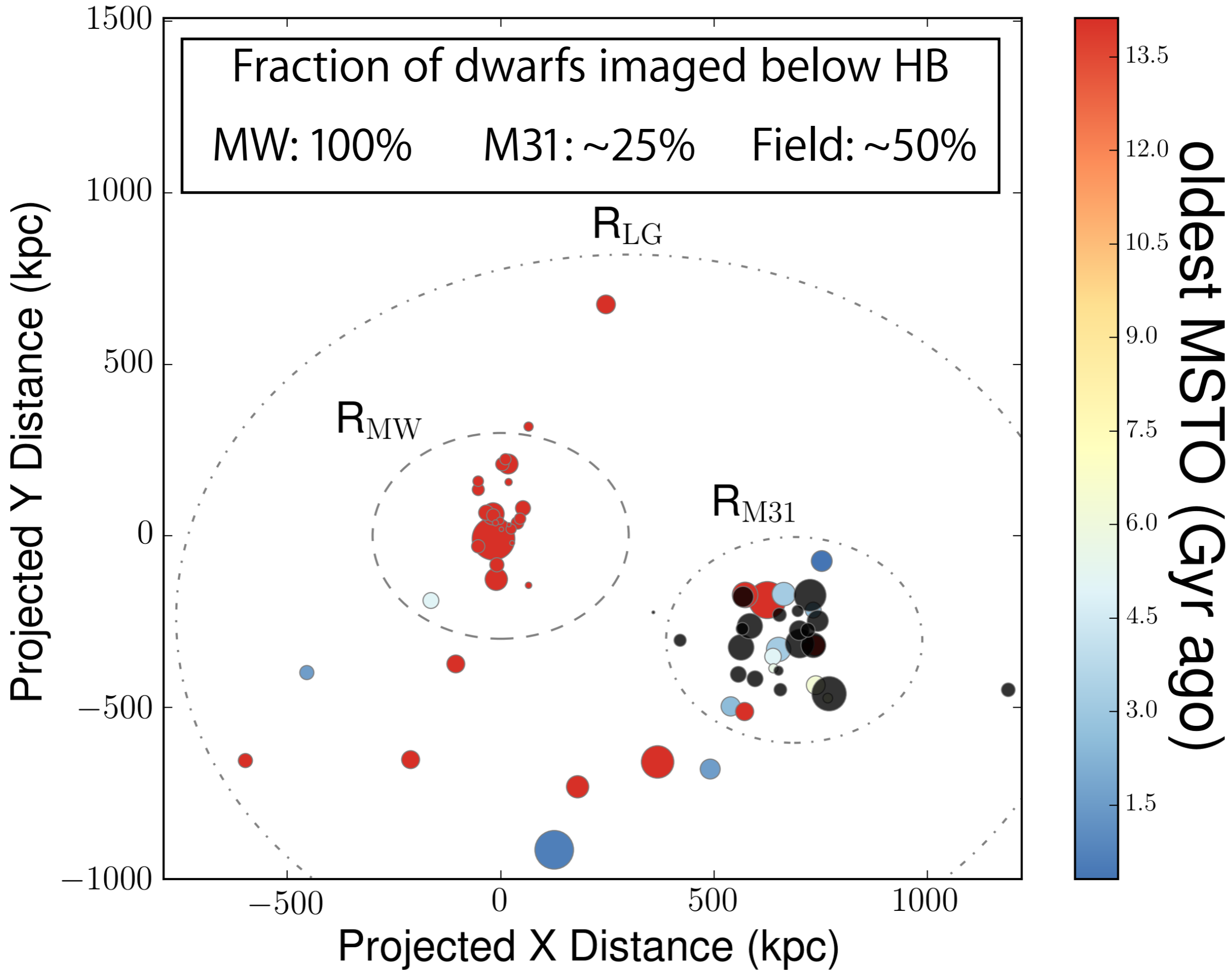
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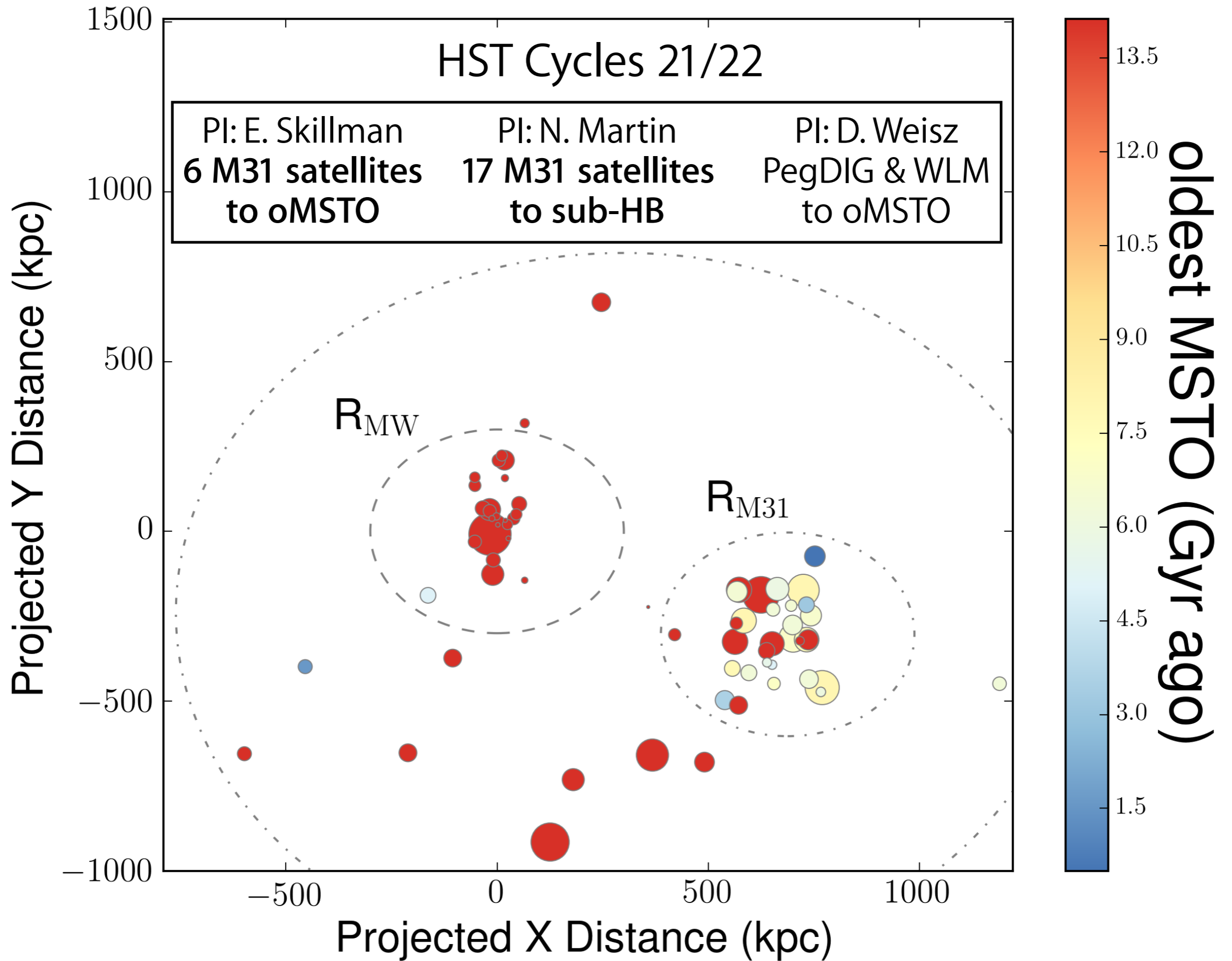


Martin et al. (2006)
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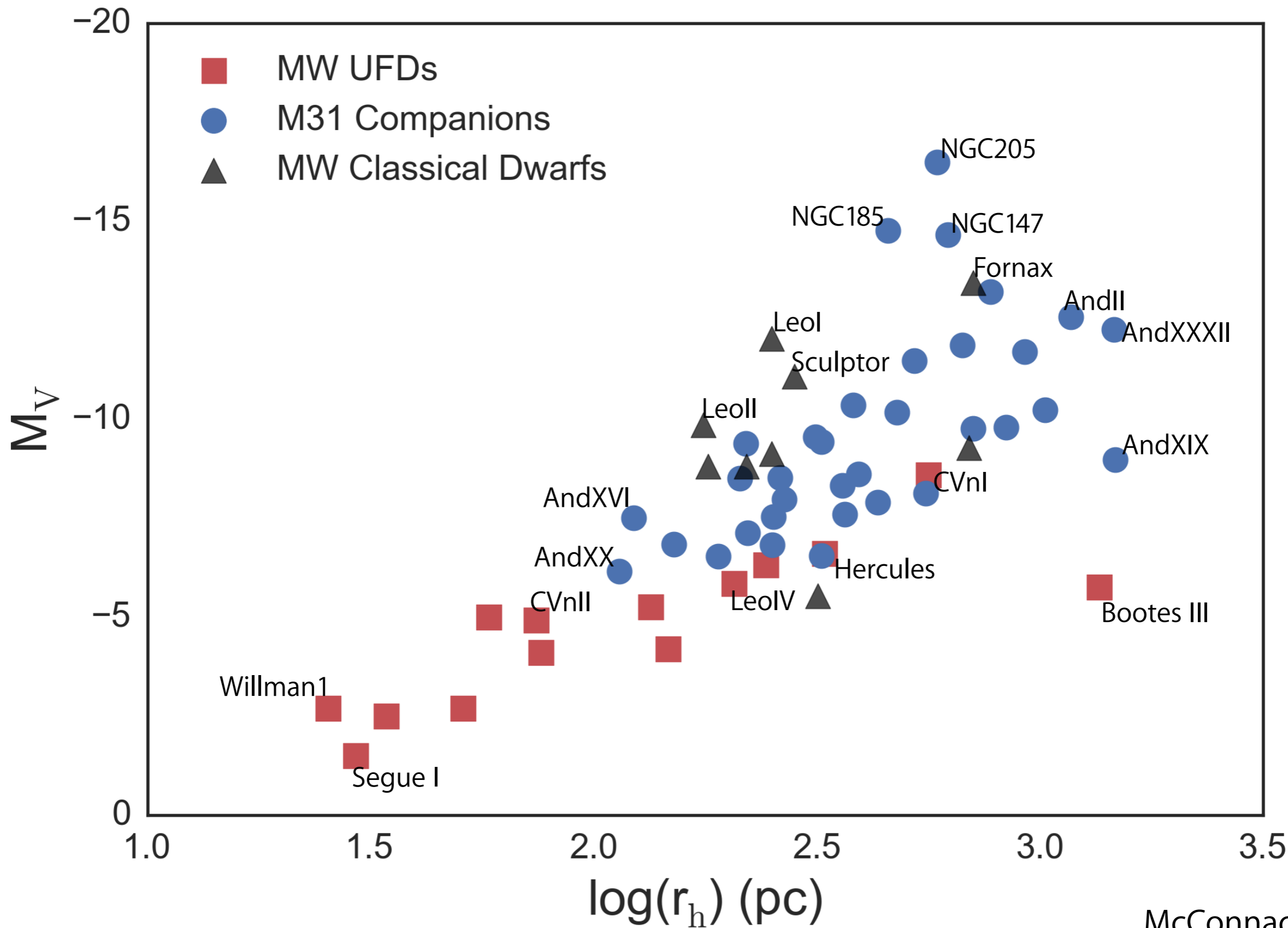
Subaru Imaging of M31 Satellites





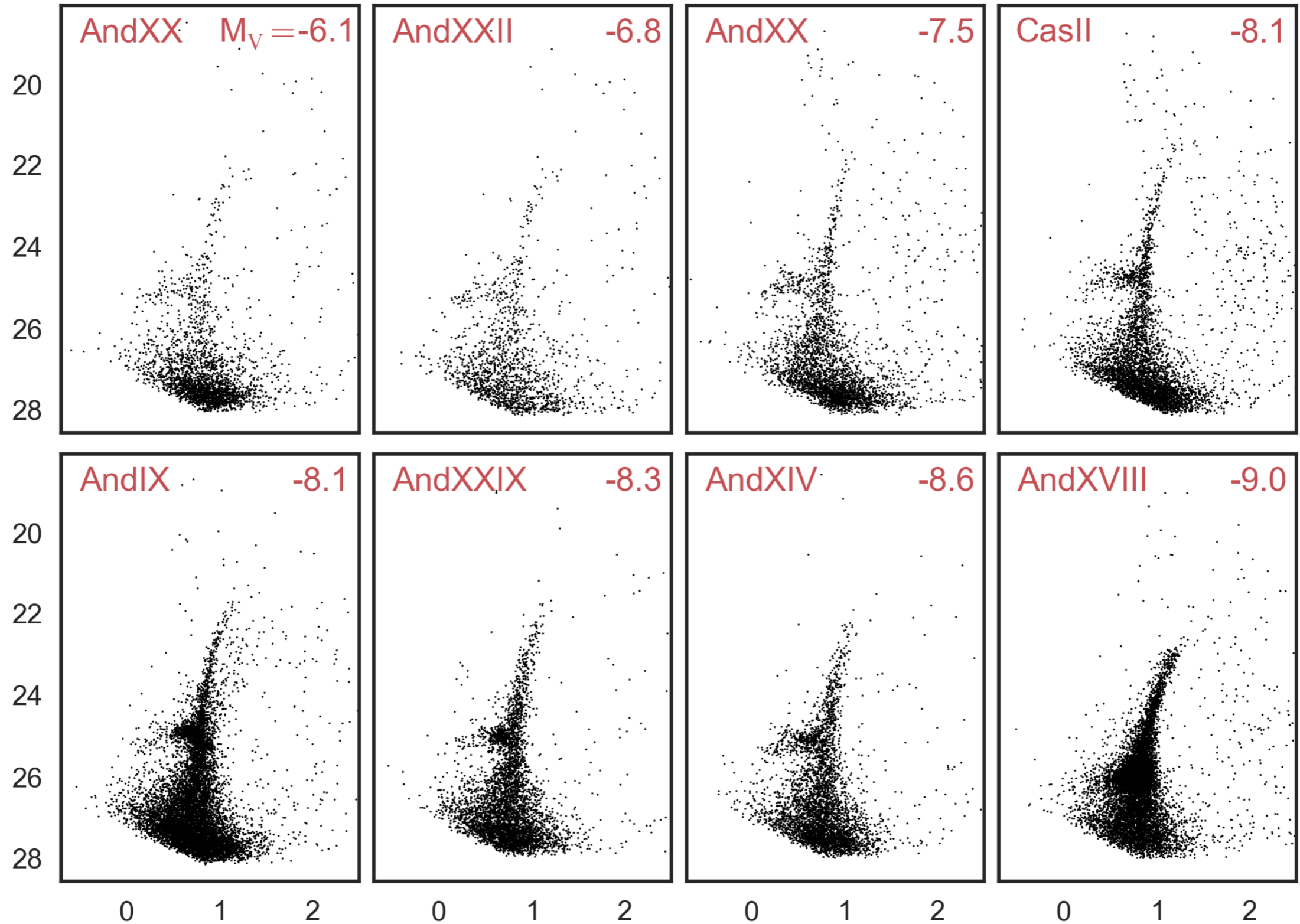


LG Satellite Physical Characteristics



Sub-HB Survey of M31 Companions

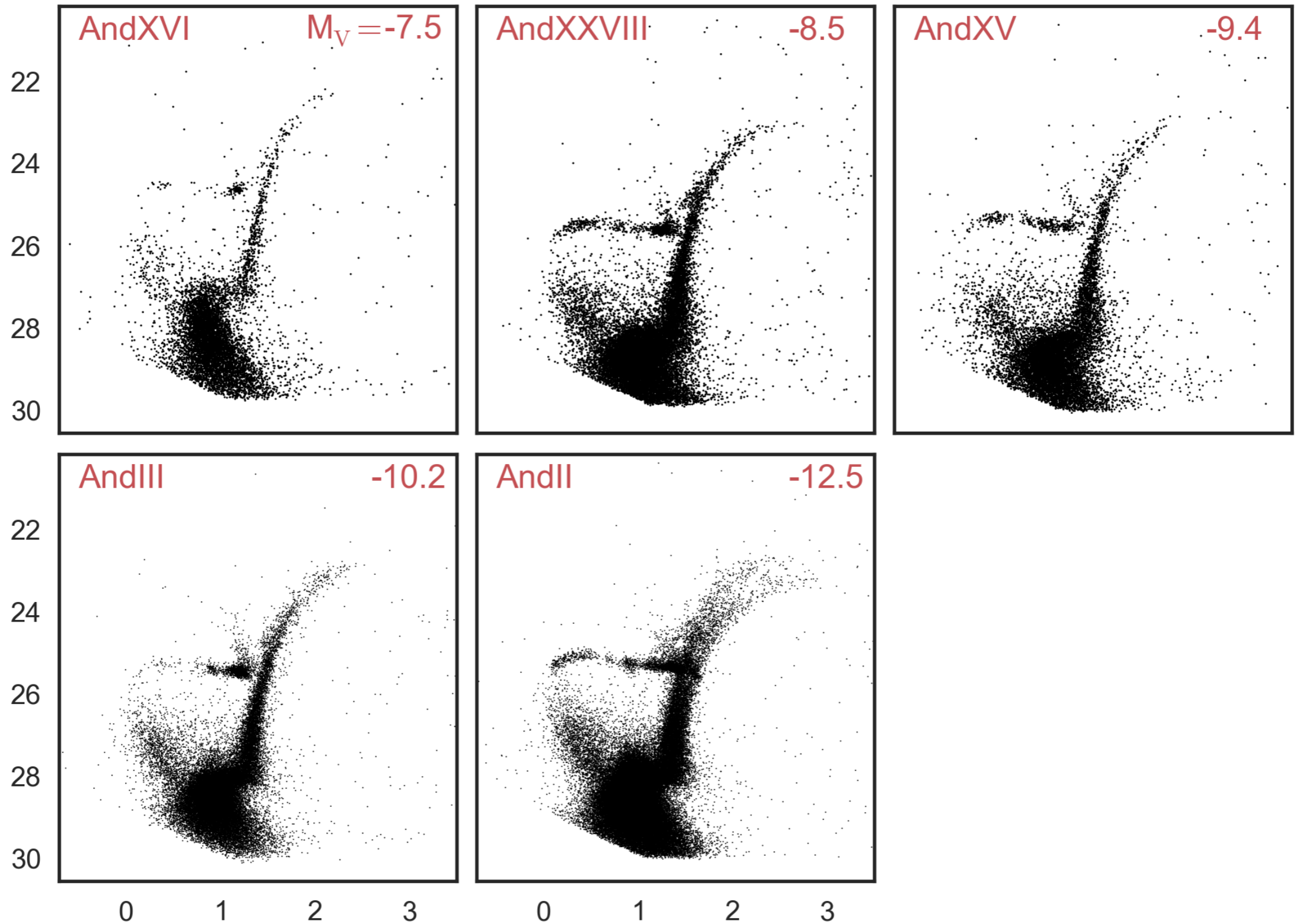
F814W



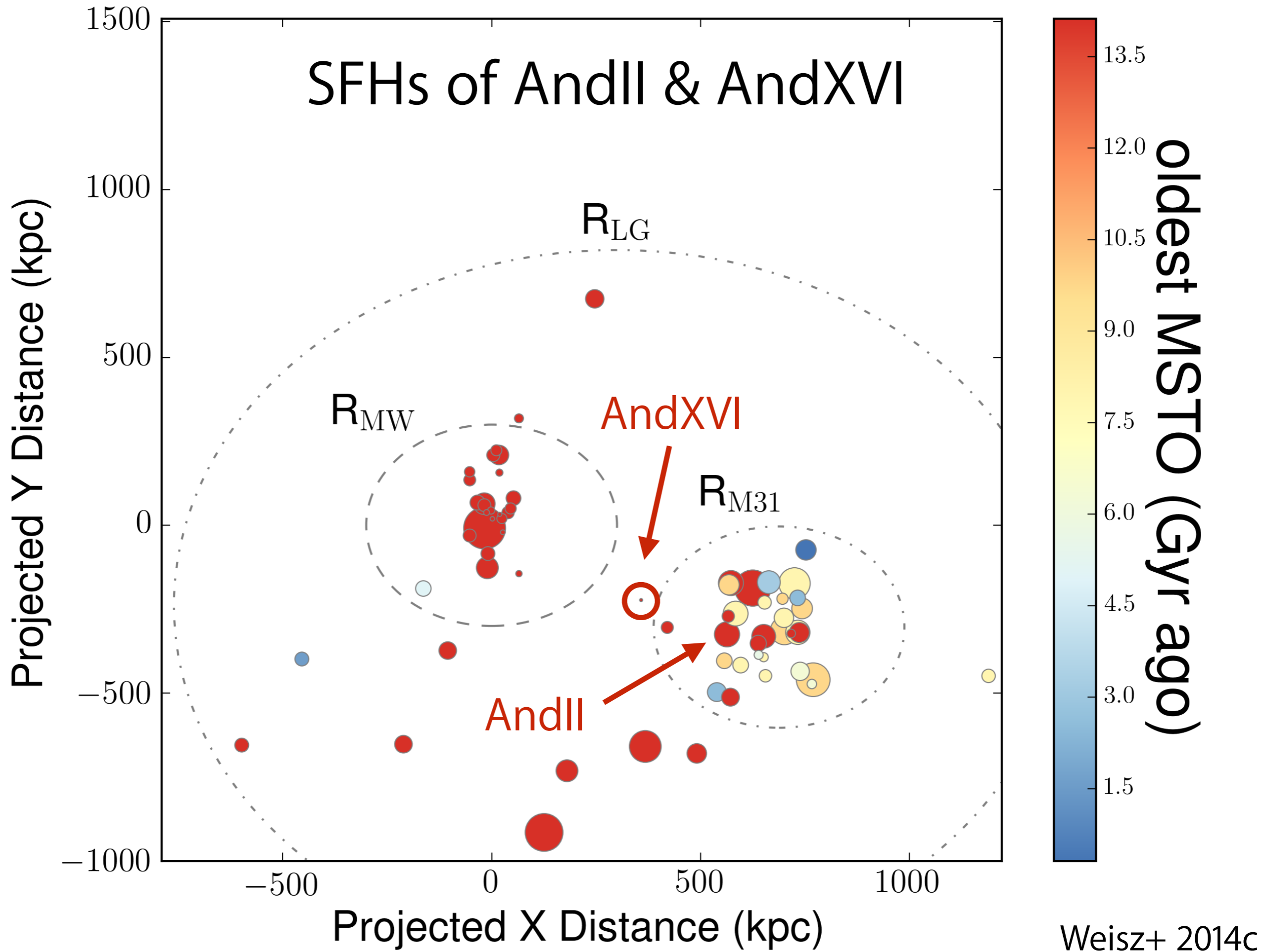
F606W - F814W

oMSTO Survey of M31 Companions

F814W



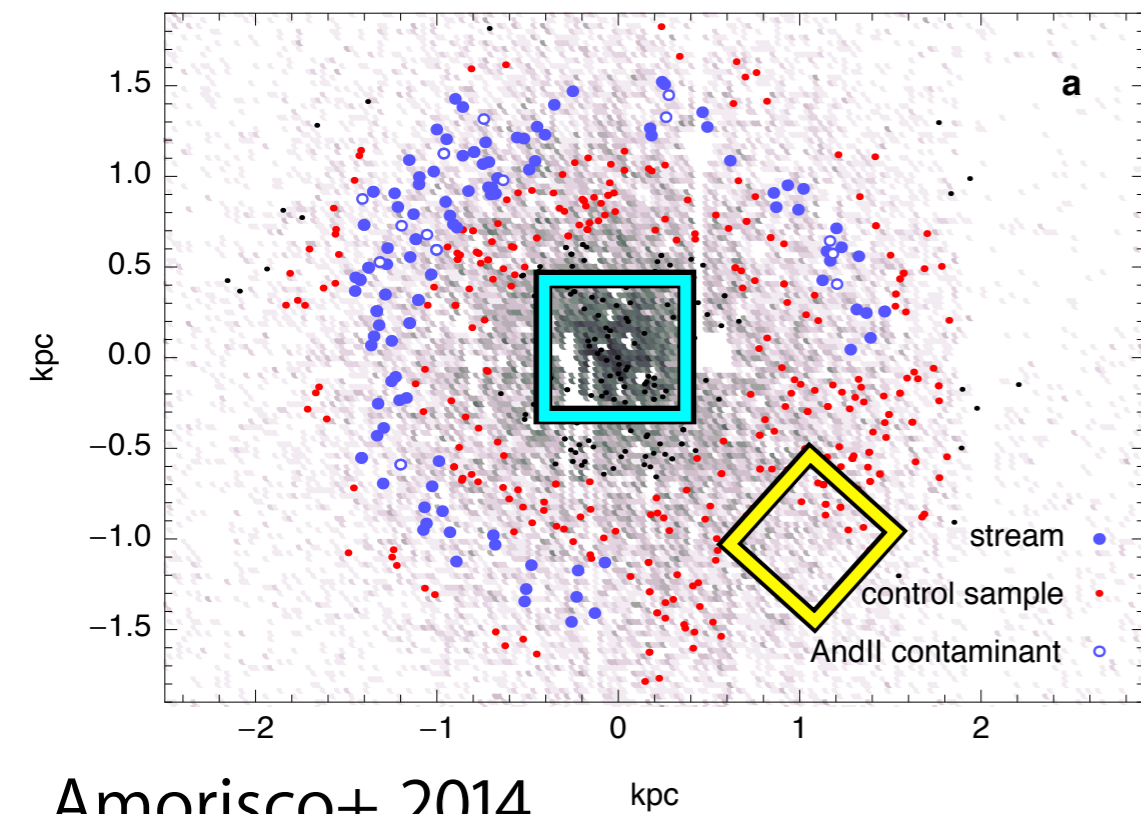
F475W - F814W



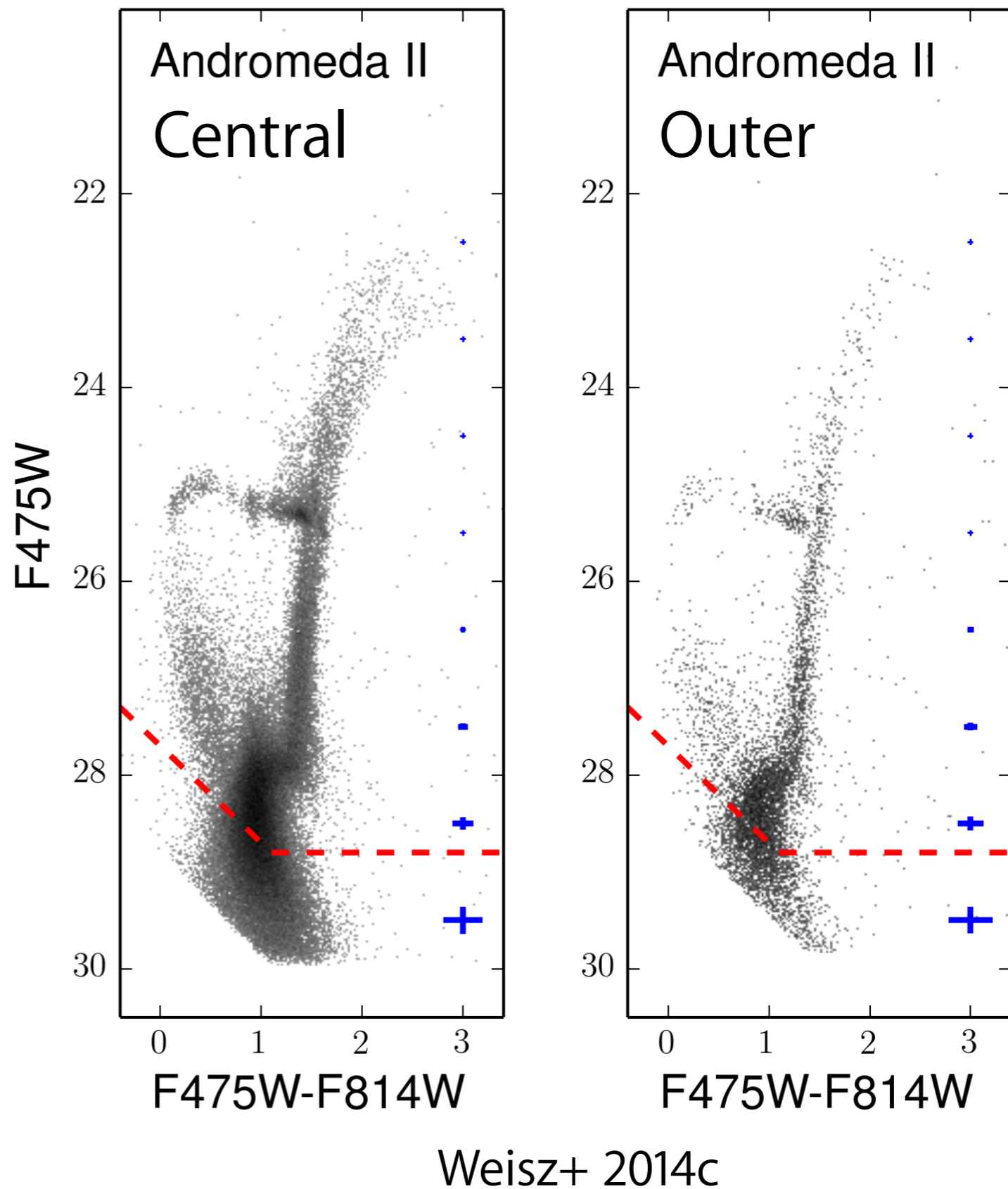
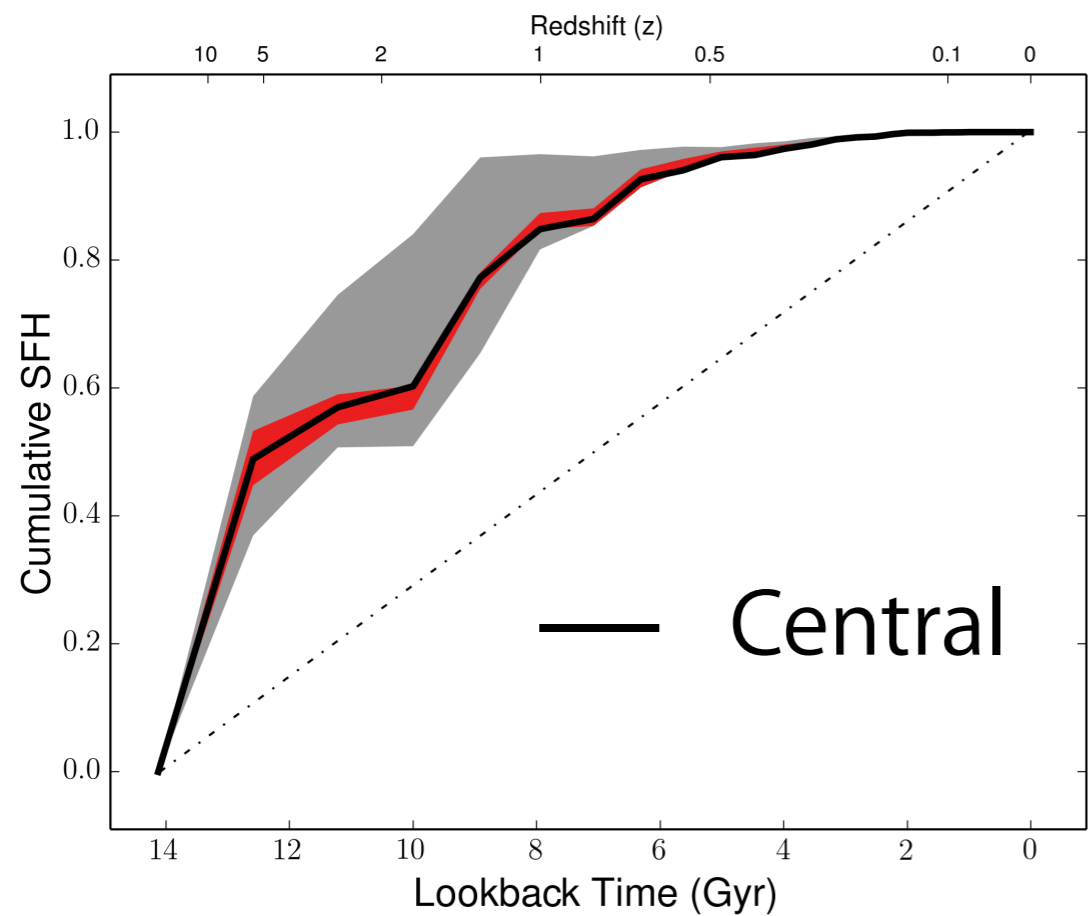
AndII

$$M_V = -12.5, \log(M_\star/M_\odot) \sim 7$$

$$D_{M31} \sim 195 \text{ kpc}$$



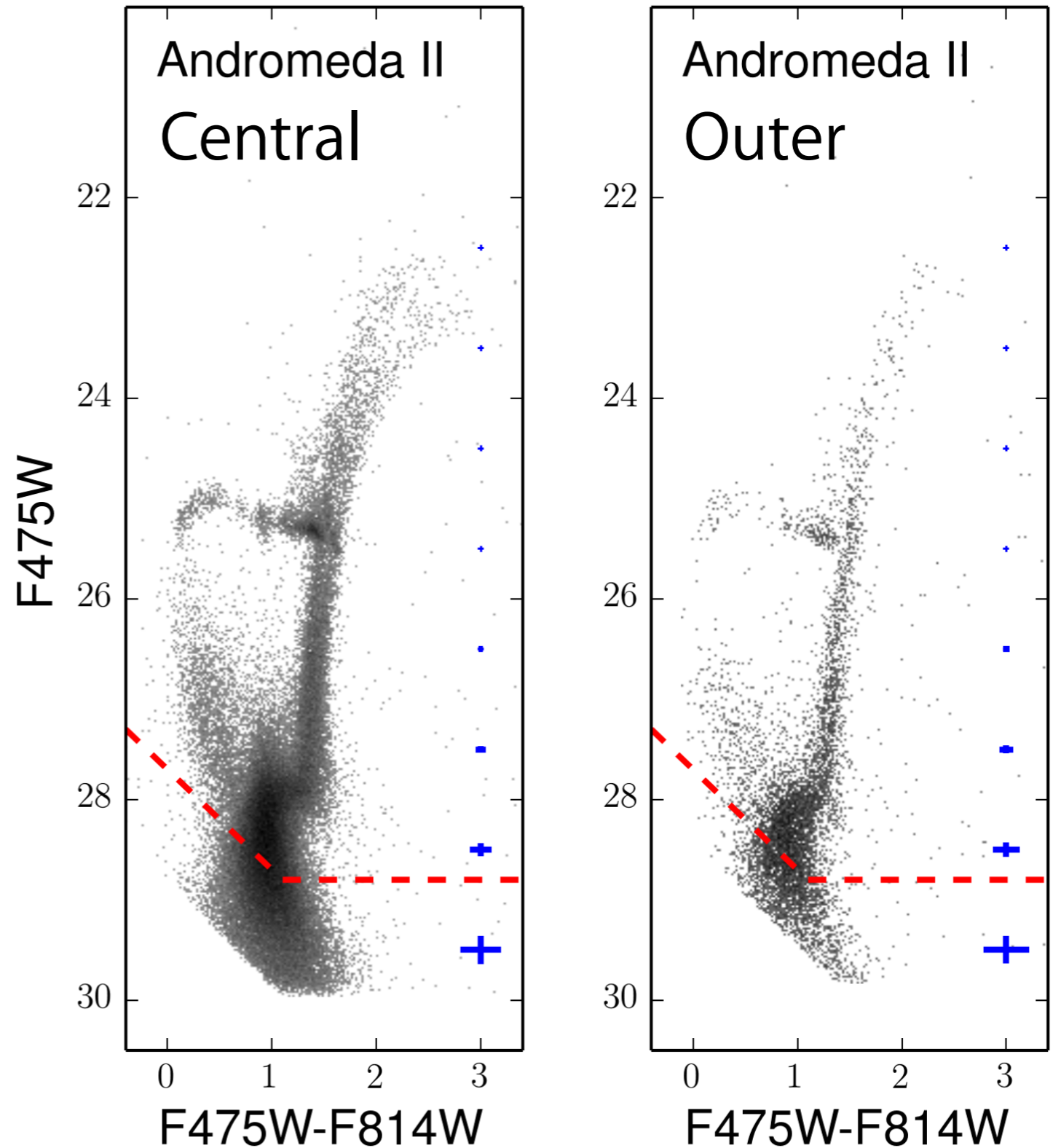
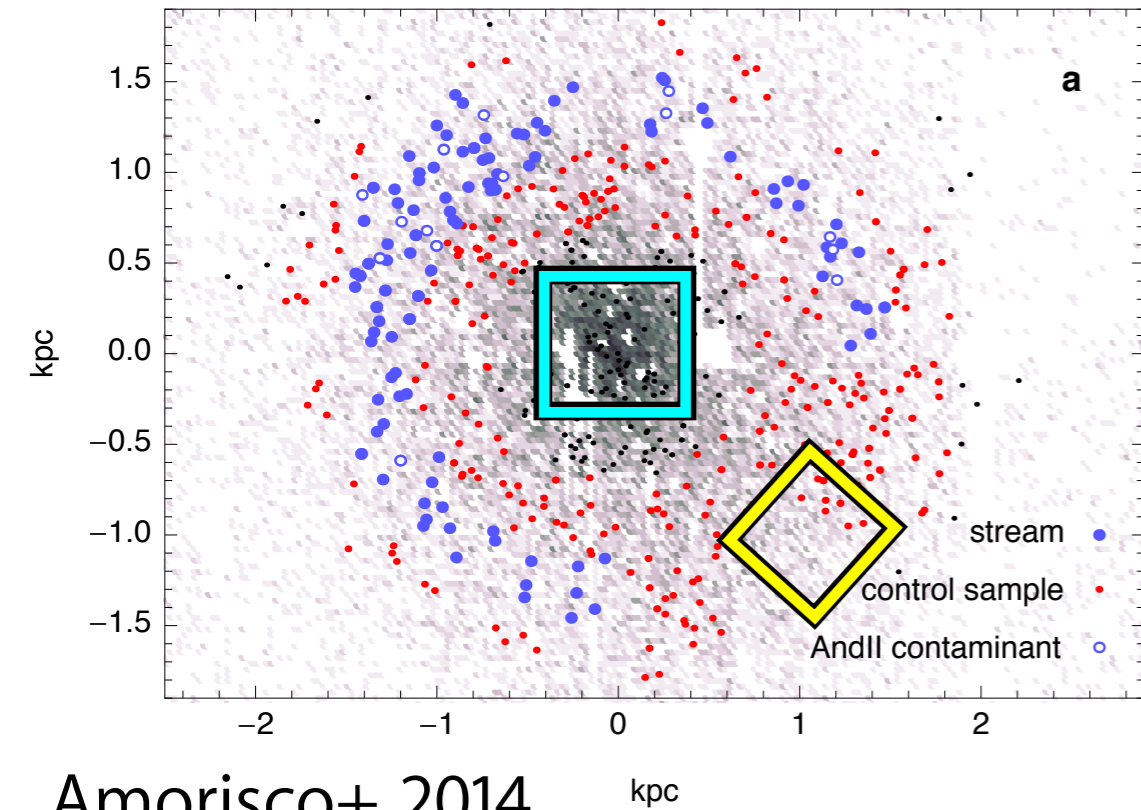
Amorisco+ 2014



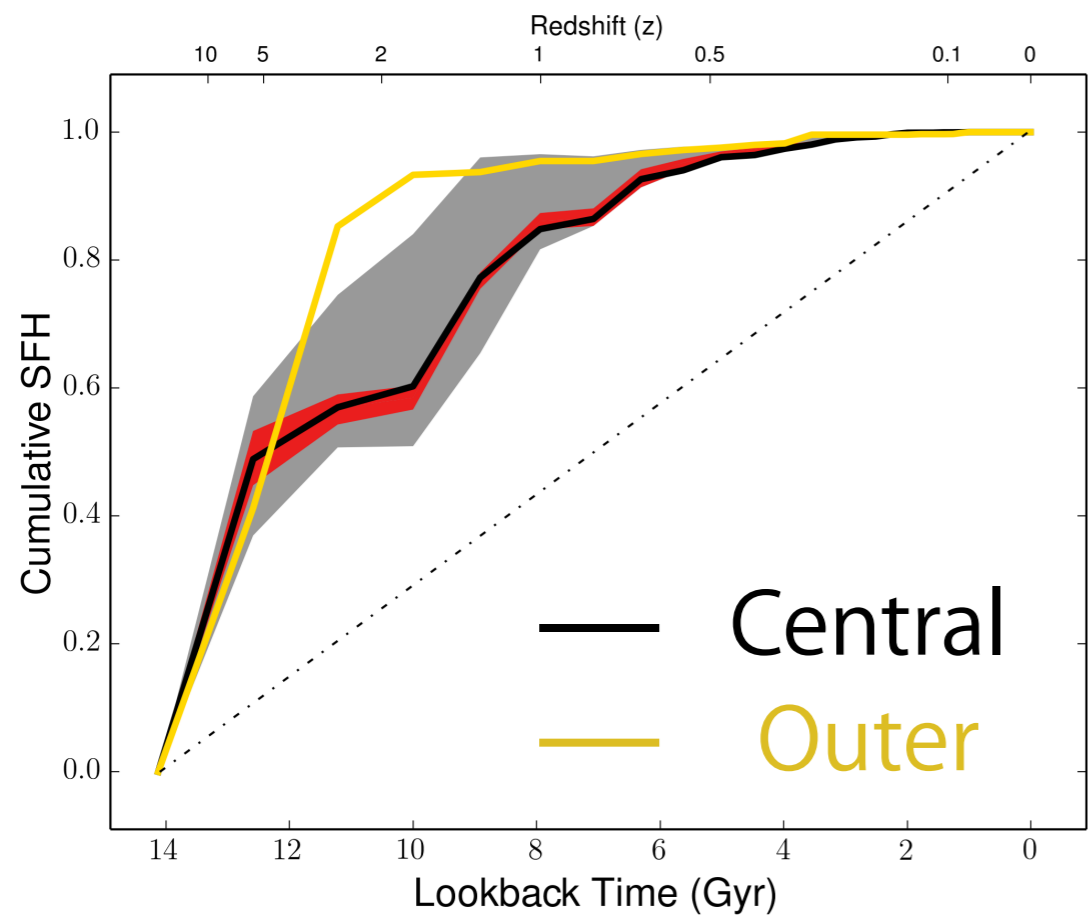
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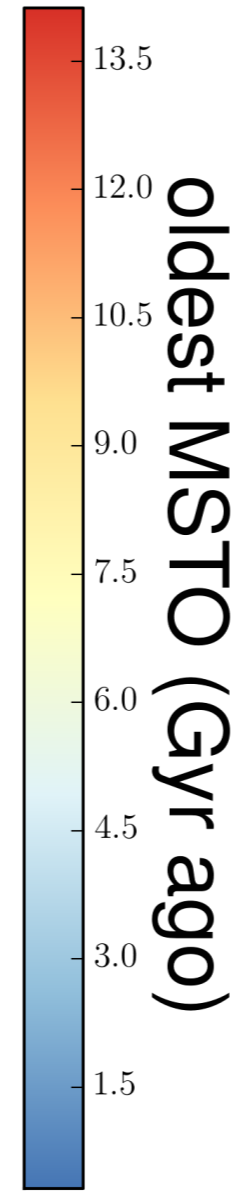
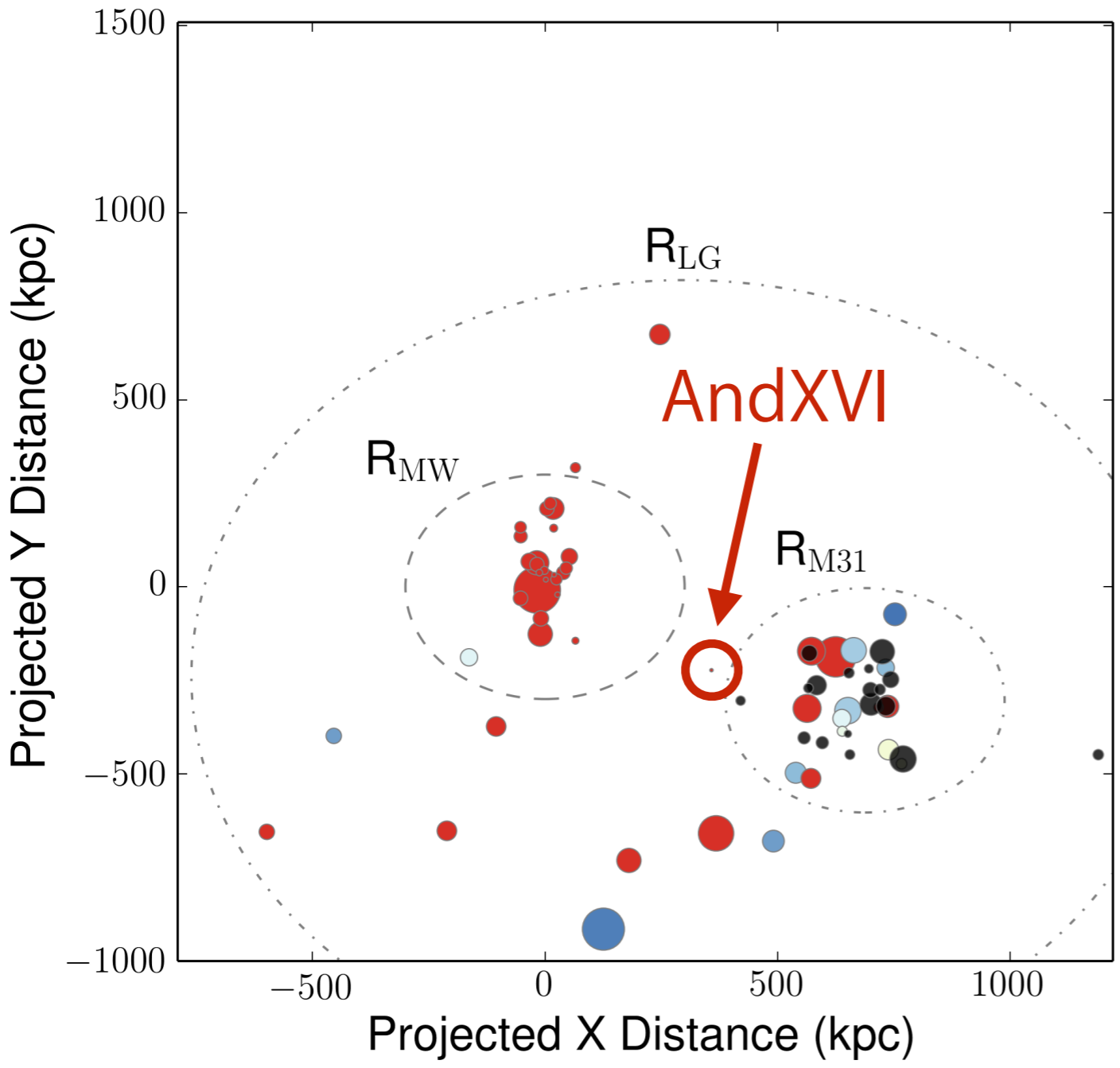


Amorisco+ 2014

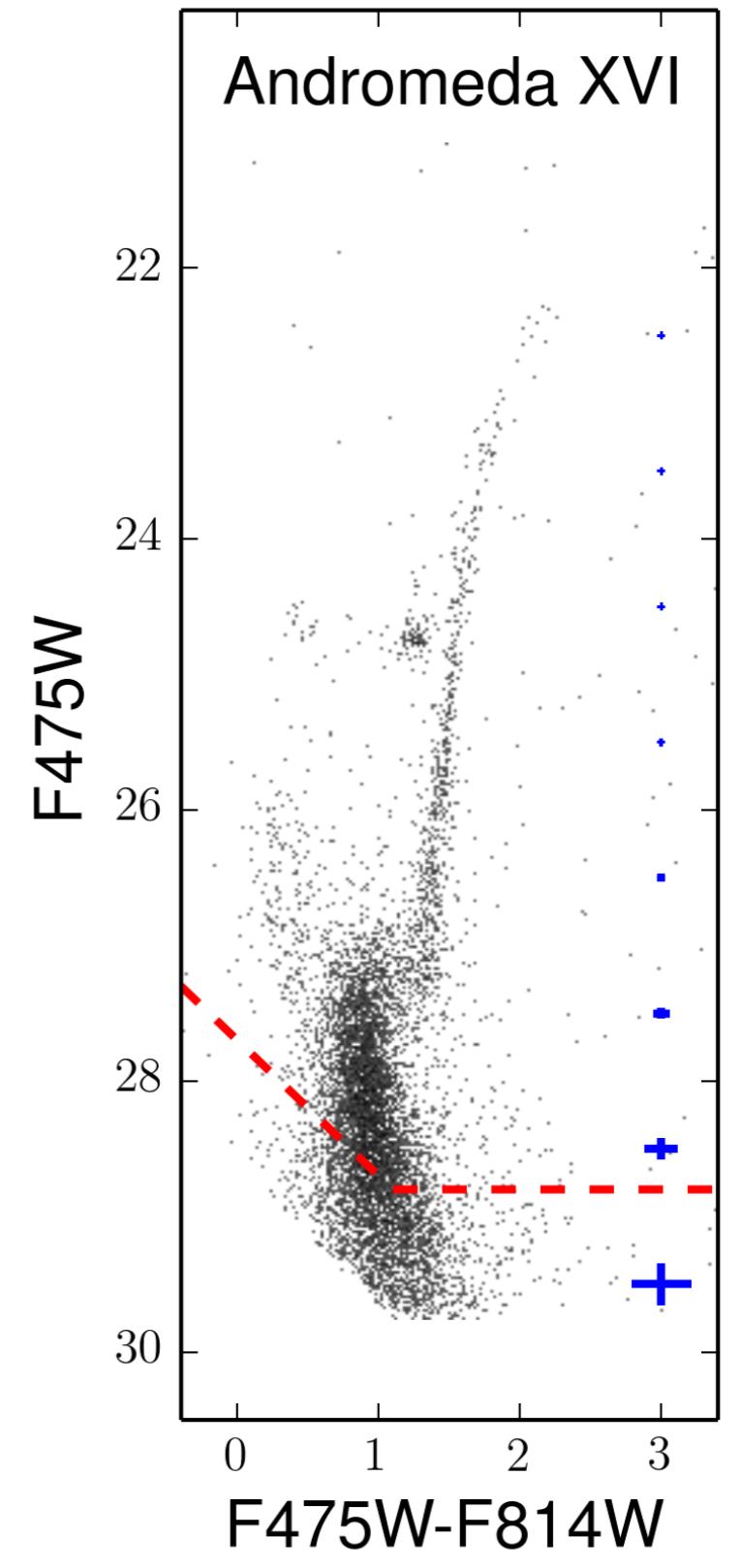


Weisz+ 2014c

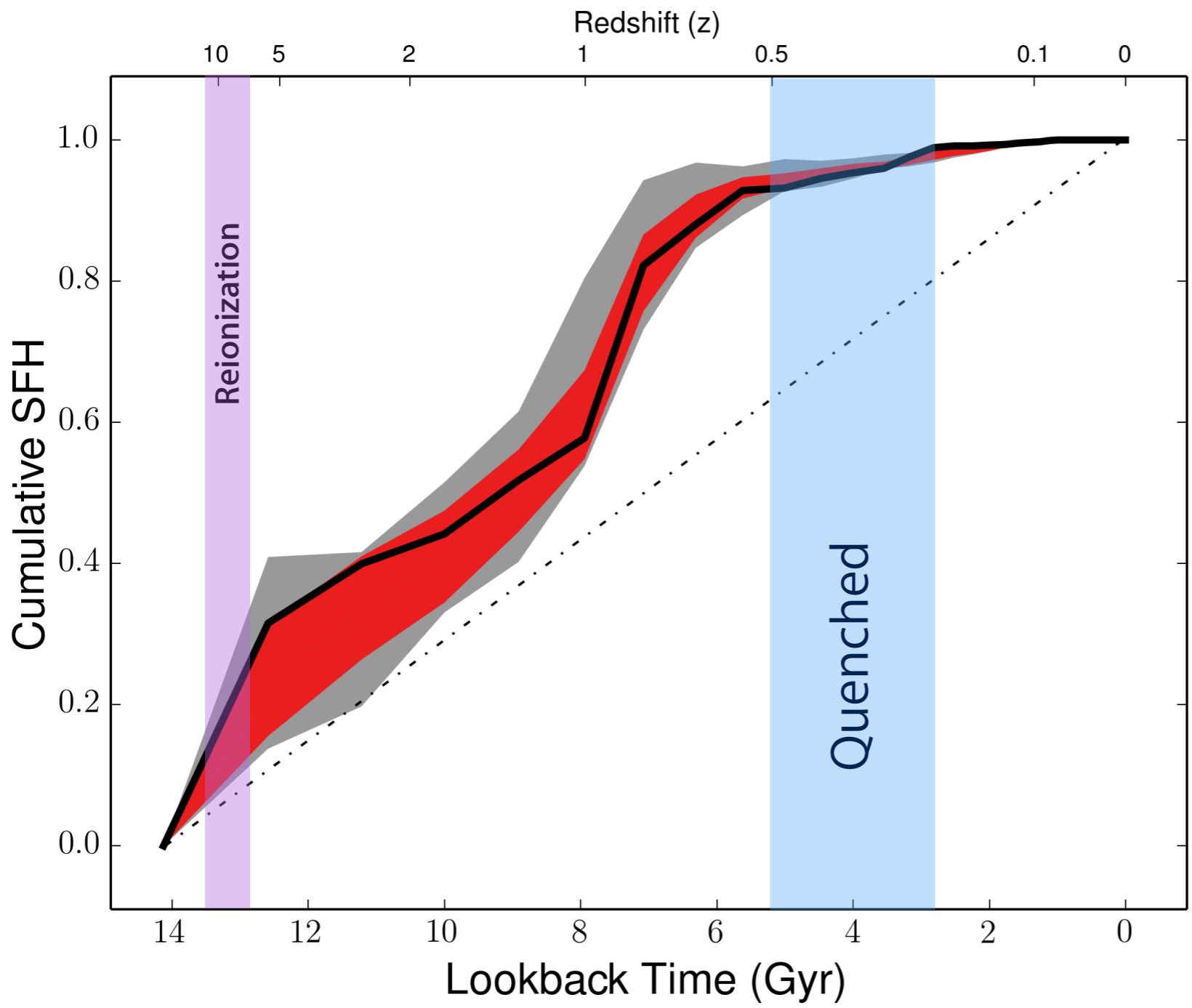
AndXVI



$M_V = -7.5, \log(M_{\star}/M_{\odot}) \sim 5$
 $D_{M31} \sim 320$ kpc

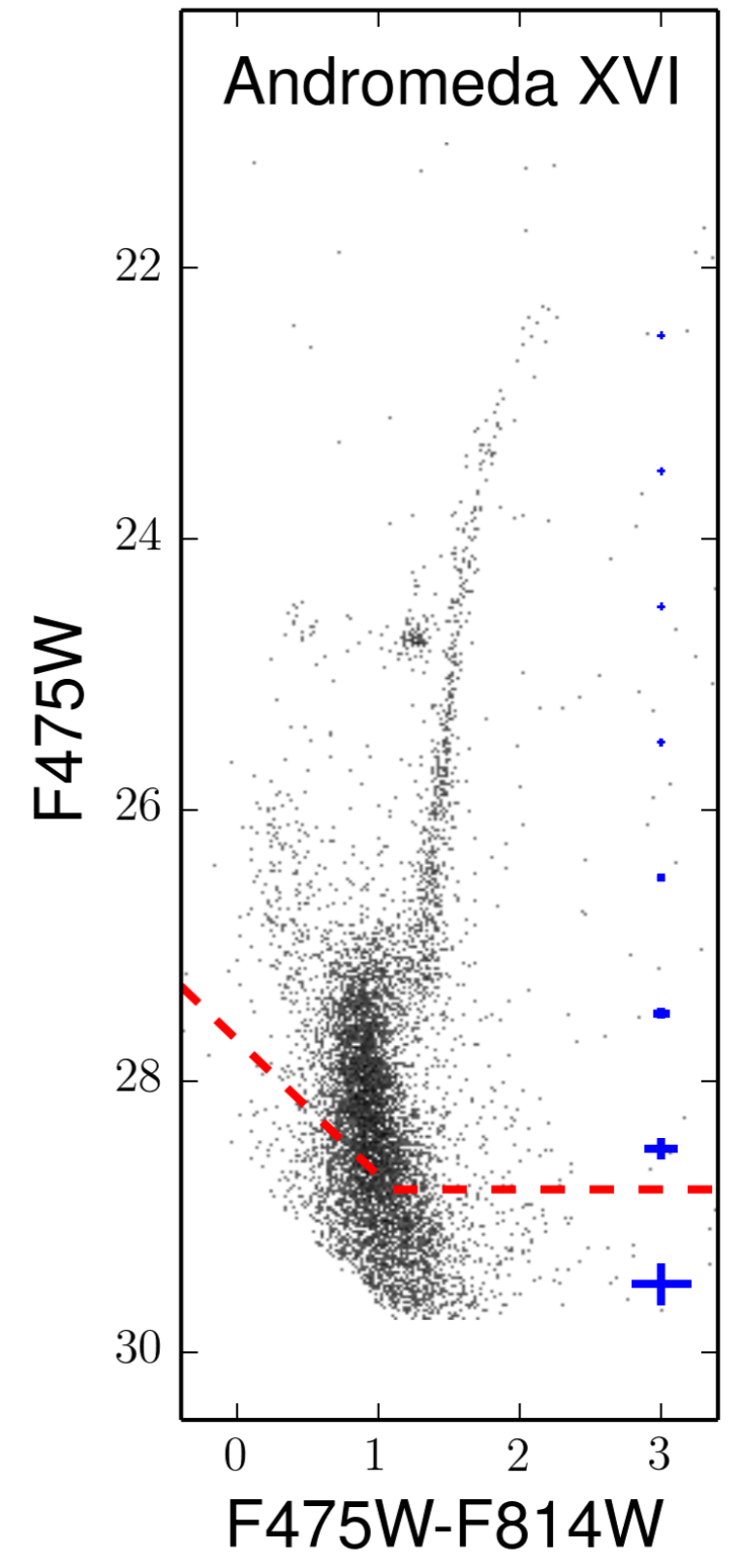


AndXVI



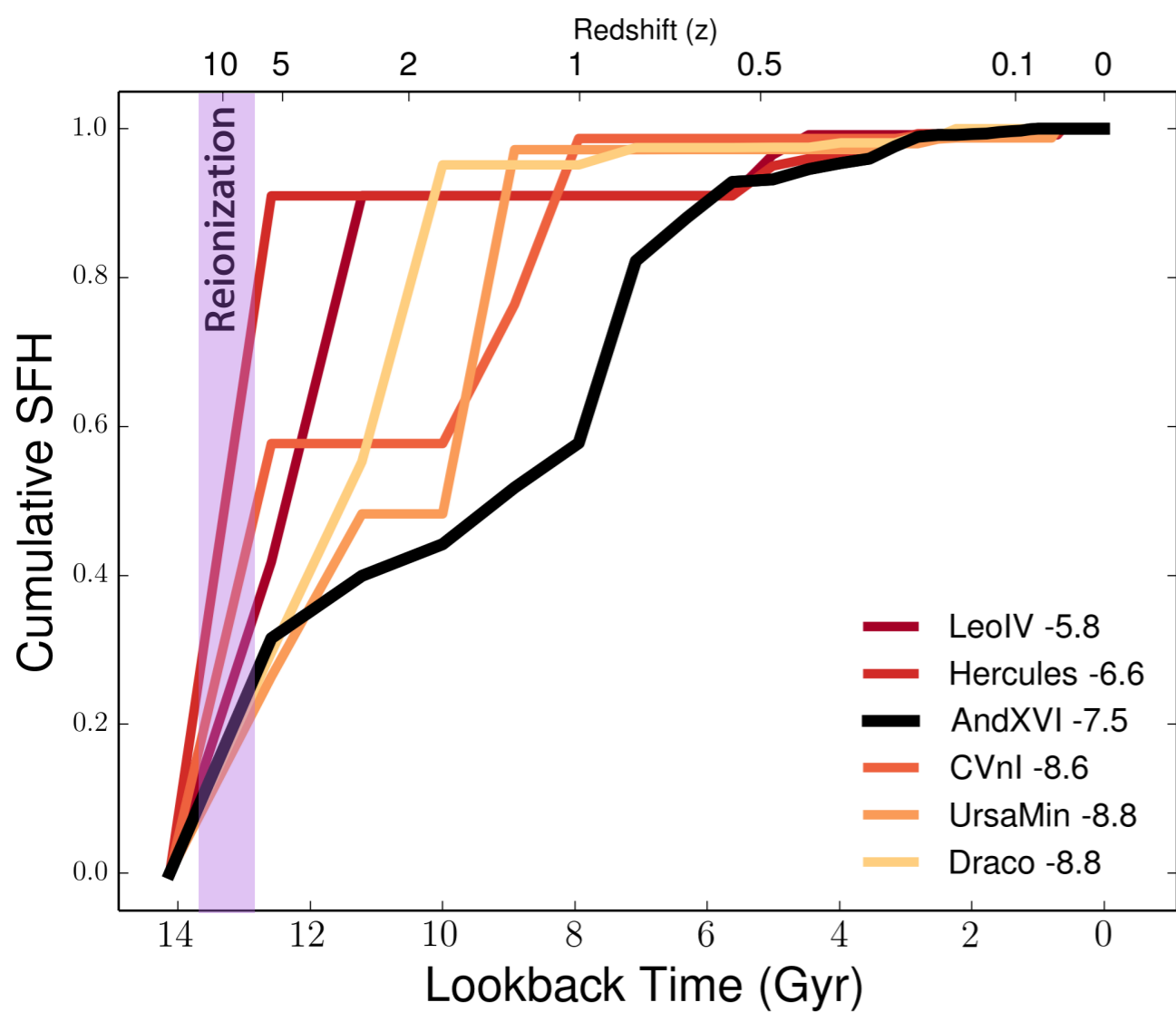
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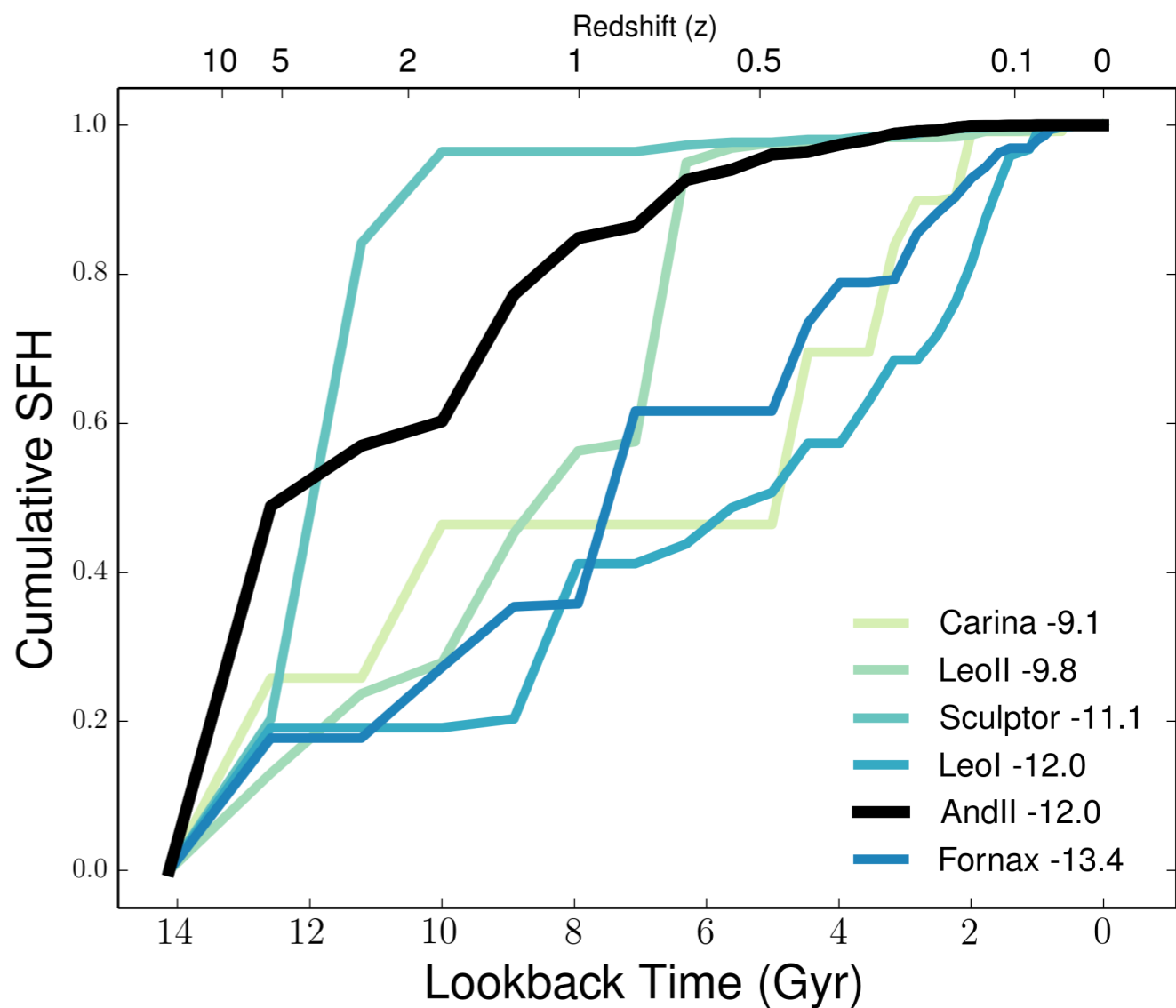


Weisz+ 2014c

AndXVI & Faint MW Satellites



AndII & Luminous MW Satellites



Summary

- **Deep HST-based CMDs of 23 M31 satellites**
 - Combine with archival HST imaging for coverage of ~35 M31 satellites
- **Measurements**
 - Characterize SFHs, AMRs, population gradients, variable stars
 - Improved Distance Determinations
- **Science Questions**
 - What are the Evolutionary Histories of M31 Satellites?
 - Similarities/Differences between M31 and MW Satellite SFHs?
 - Is there a link between host galaxy and satellite evolution?
 - Differences in satellites on/off the great Andromeda plane?

Discussion Questions

1) How much can a central galaxy affect the evolution of its satellites?

2) What is the role of low-mass galaxies in reionizing the universe vs. what does reionization do to low-mass galaxies?

3) Are there *unique* observable signatures of external (e.g., ram pressure) vs. internal (e.g., stellar feedback) processing of low-mass galaxies?