

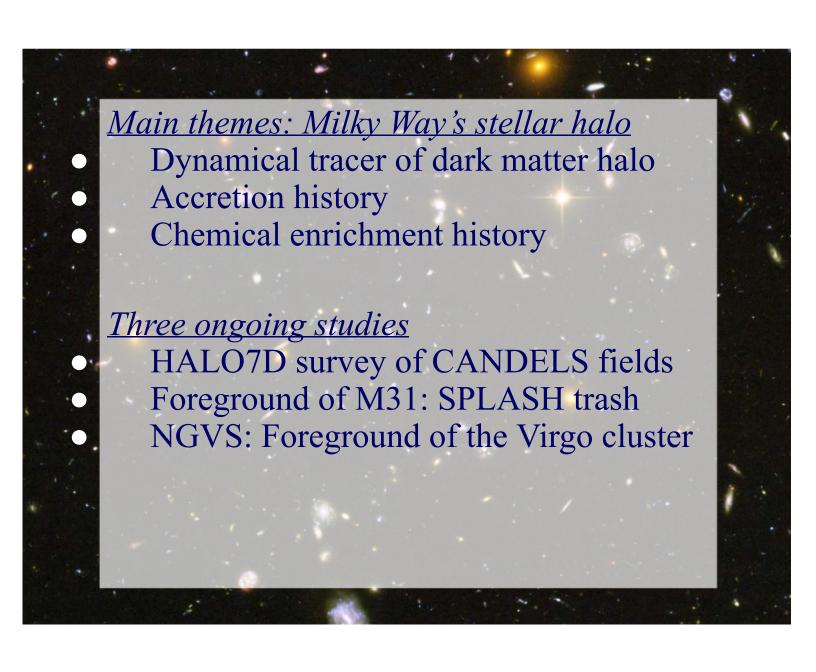
.. and a few related examples

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HALO7D survey

HST archival legacy program

Deep multi-epoch HST imaging
Use distant galaxies as "wall paper"
Proper motion of ~ 1000 MSTO stars in the MW halo

Keck/DEIMOS spectroscopy program

8- to 32-hour integrations of ~ 350 MW halo MSTO stars in three northern CANDELS fields

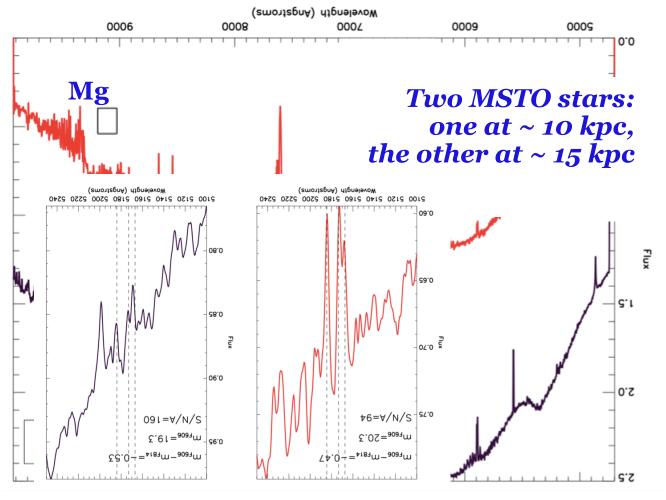
Future extensions: M31 foreground fields? Fronter Fields? Radial velocities

Chemical abundances and LOS distances

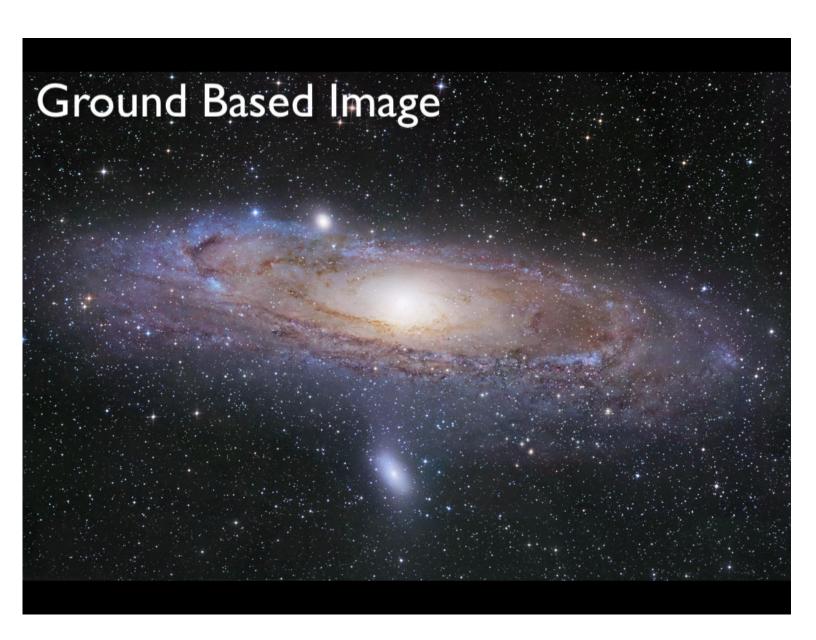
Fillers: exquisite quality spectra of ~ 1500 distant galaxies

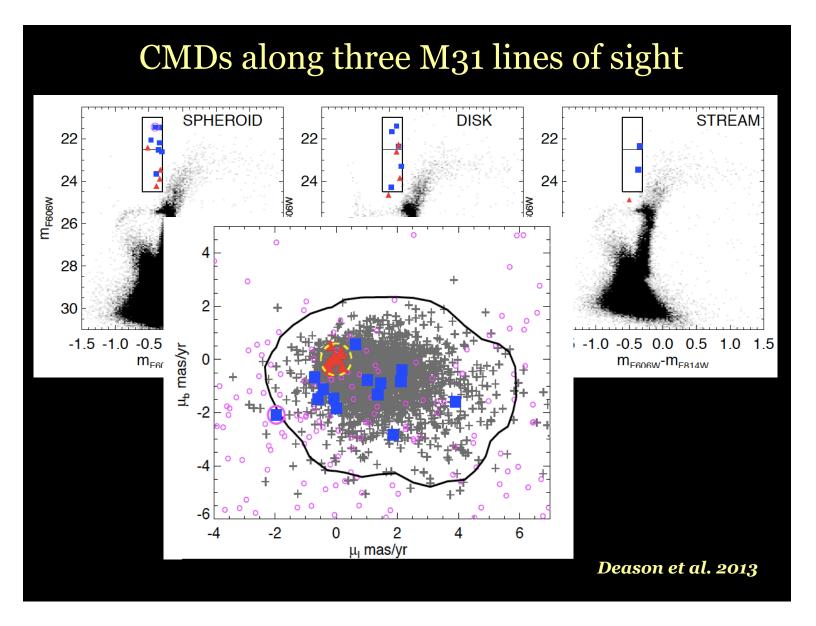
Anderson, <u>Barro</u>, Brown, Conroy, <u>Cheung</u>, <u>Choi</u>, <u>Cunningham</u>, <u>Deason</u>, Faber, <u>Guo</u>, Koo, Rockosi, <u>Sohn</u>, <u>Toloba</u>, van der Marel, <u>Yesuf</u>

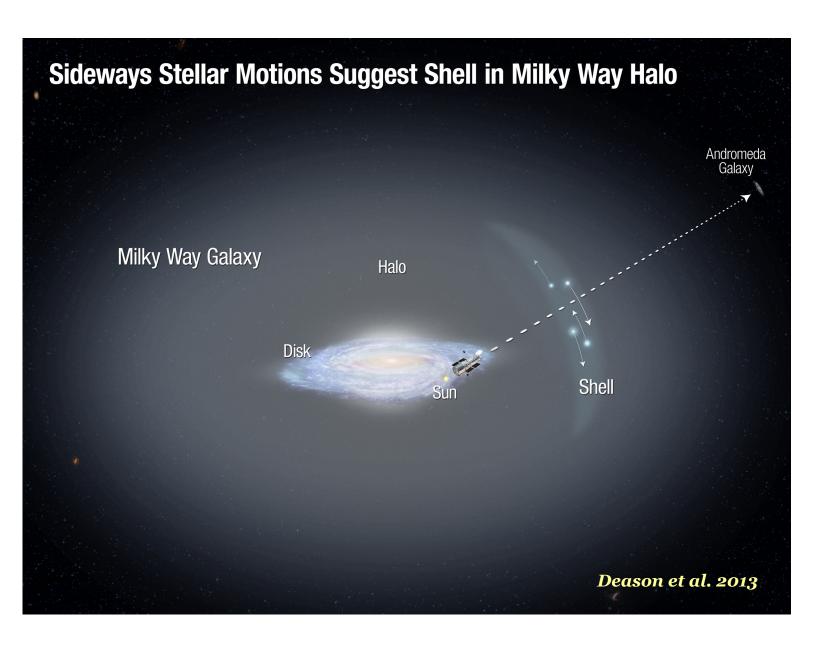
Sample spectra from ~ 6 hours of integration in the EGS







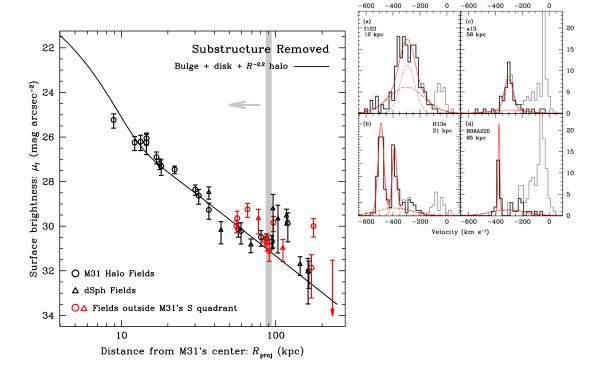




Andromeda has a large (virialized?) stellar halo

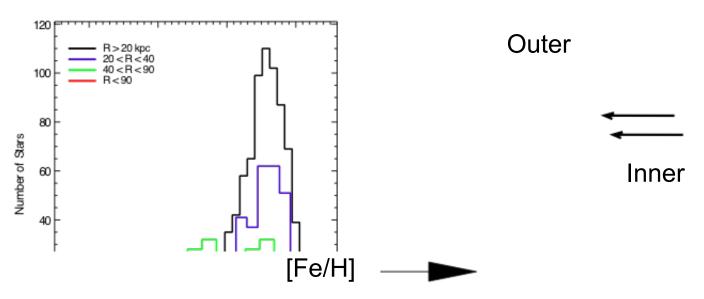
Spectroscopy allows us to statistically remove substructure (partially digested former dwarf satellite galaxies) in different fields

- O Fields in M31's South quadrant
- Fields North
 of M31's
 semi-major
 axis



Gilbert et al. 2012

Andromeda's stellar halo gets progressively more metal poor going from the center to the outskirts



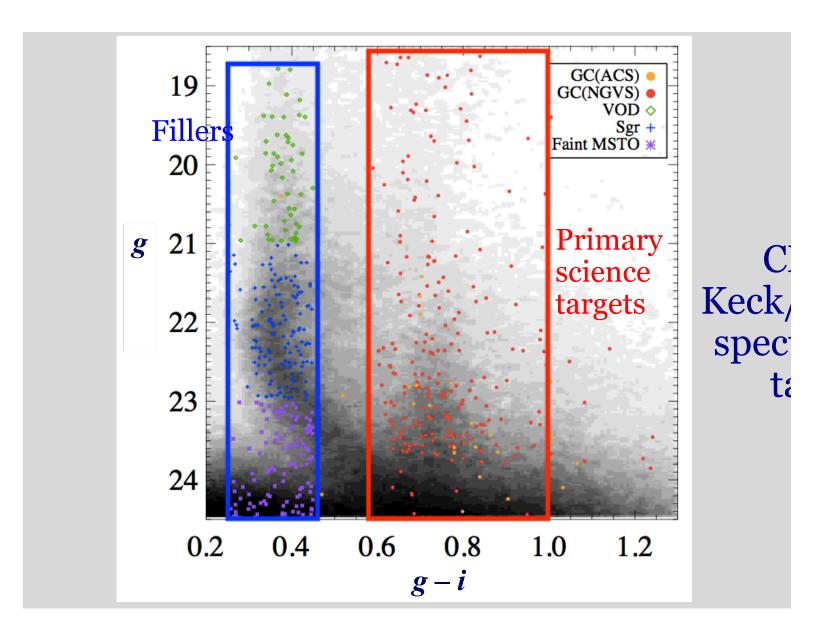
Kalirai et al. (2006, ApJ) Gilbert et al. (2014, submitted)

The dark matter content of Virgo cluster dwarf elliptical galaxies

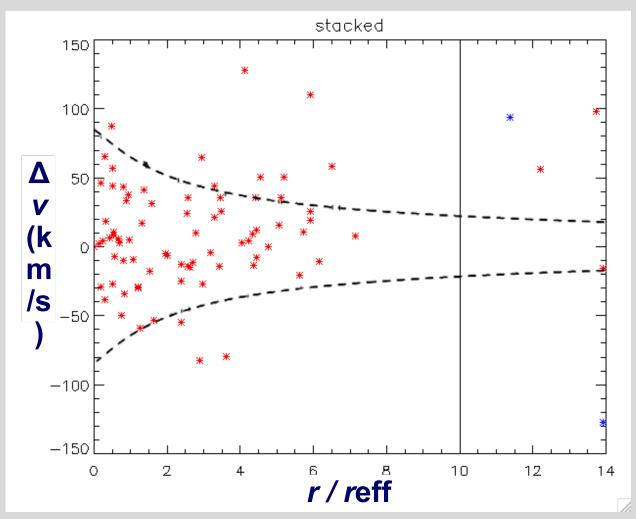
(and ancillary science)

with:

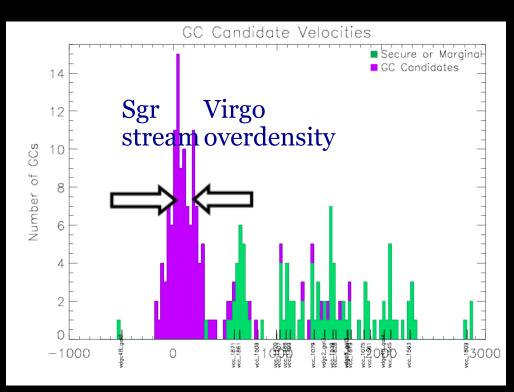
Elisa Toloba, Eric Peng, Jingjing Chen, Claire Dorman, Meredith Muller, Biao Li *Stephanie Chen, Jason Chu, Lea Sparkman, Samyukta Yagati*,
Pat Côté, Laura Ferrarese
[NGVS, SIP program]



Stack of GC satellites for 21 Virgo Cluster dwarf ellipticals



Milky Way halo stars in the foreground of the Virgo cluster



Summary

- Stay tuned for results from the HALO7D program!

MW halo mass and accretion history:
6D position/velocity and chemical abundance measurements

Distant galaxy evolution: outflows, integrated properties of their stellar population

- HALO7D extension this fall should yield detailed chemical abundances of 100's of M31 red giant stars