

# Satellites of satellites:

## the power of combining HST photometry and Gaia astrometry

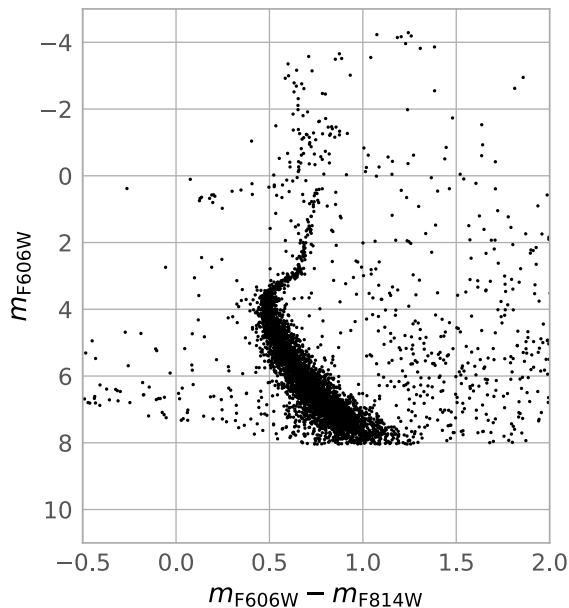
Elena Sacchi<sup>1</sup>, Hannah Richstein<sup>2</sup>, Nitya Kallivayalil<sup>2</sup>, Roeland van der Marel<sup>1</sup>, and the Milky Way 6D collaboration  
[esacchi@stsci.edu](mailto:esacchi@stsci.edu) – <sup>1</sup>Space Telescope Science Institute, <sup>2</sup>University of Virginia



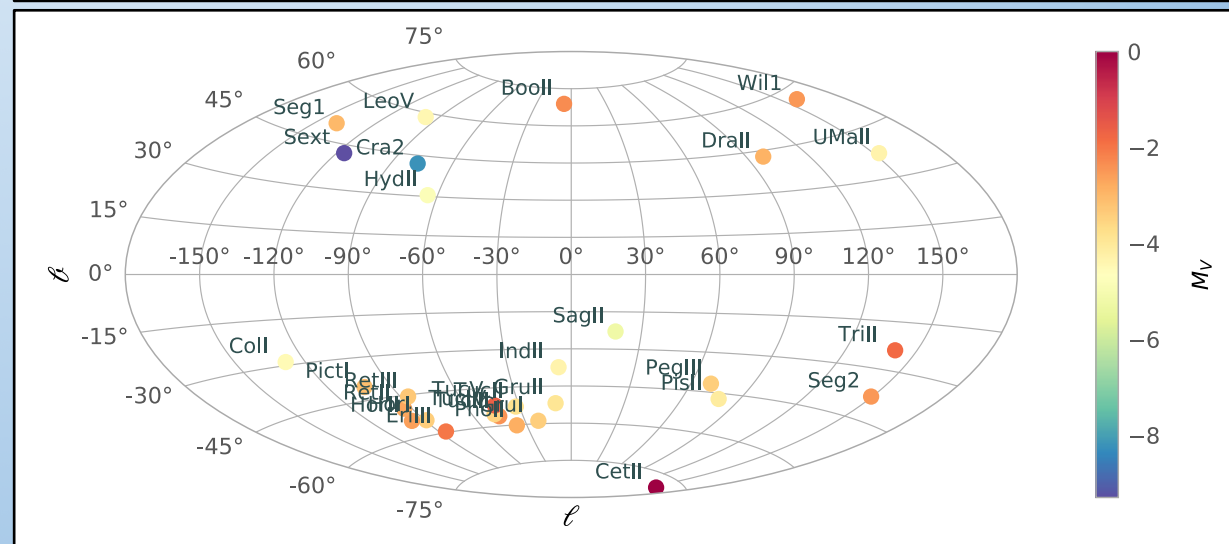
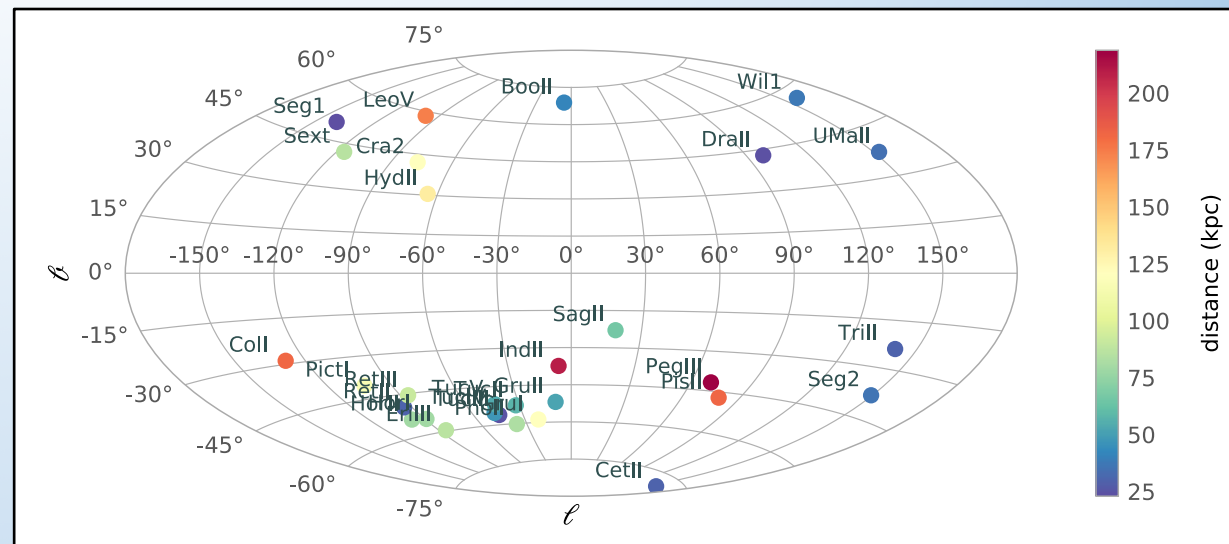
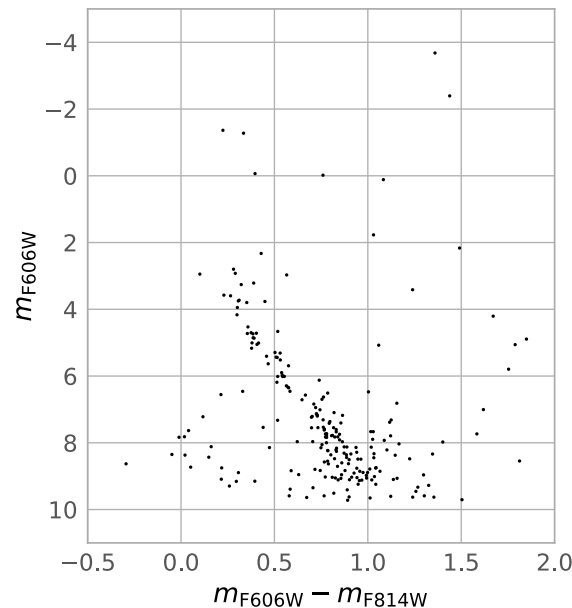
### Milky Way 6D Cosmology

- HST Treasury Program 14734 (PI: Kallivayalil) to analyze the stellar populations and color-magnitude diagrams (CMDs) of 30 ultra-faint dwarf galaxies.
- **Gaia DR2 proper motions** to better constrain the possible dynamical association of the dwarfs with the Magellanic Clouds (Kallivayalil+18).

Sagittarius II  
5139 stars



Cetus II  
239 stars



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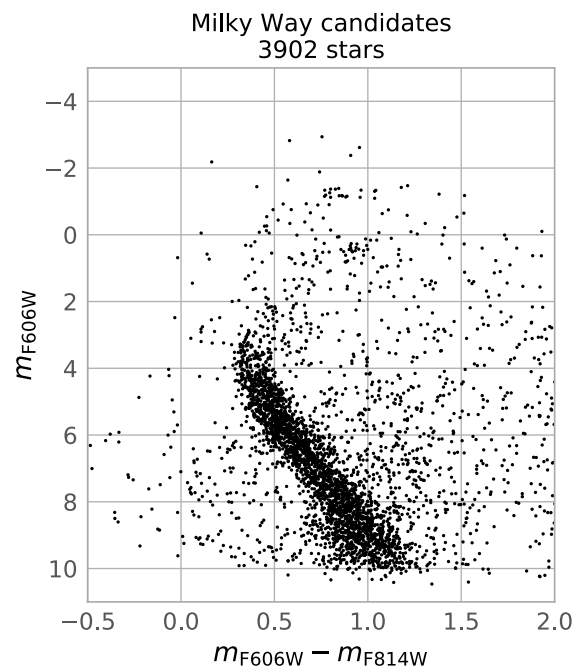
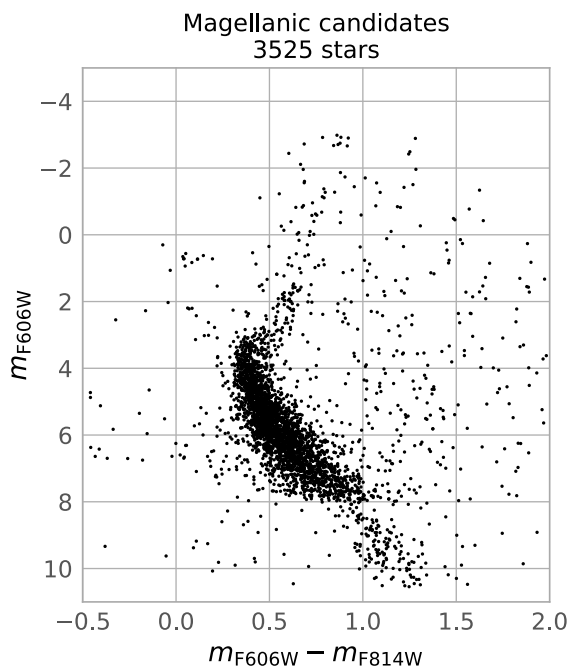
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### Star Formation Histories: is the quenching different for the MC candidate satellites?

SFHs inferred with:

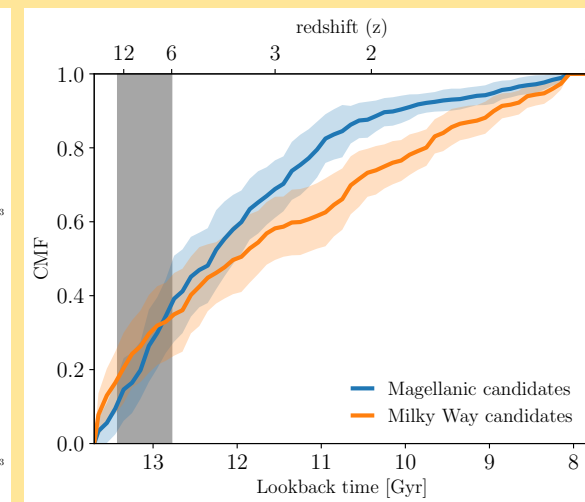
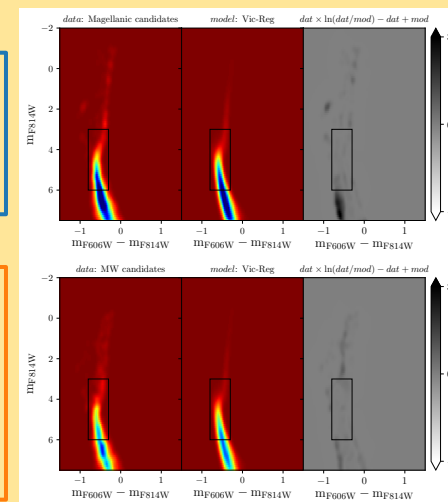
- synthetic CMD method (SFERA, Cignoni+15)
- age step: 100 Myr
- [Fe/H] from  $-4$  to  $-1$
- 2 sets of stellar models: Victoria–Regina and MESA–MIST



stacks:

Dra II  
Hor I  
Hya II  
Phx II

Cra 2  
Gru I  
Ret II  
Tri II  
Tuc II  
Tuc III



(probability of association with the Milky Way or Magellanic Clouds from  
Jehwa+16, Sales+17, Kallivayalil+18)