

A SYNOPTIC VIEW OF THE MAGELLANIC CLOUDS:  
VMC, GAIA AND BEYOND

ESO-HQ, GARCHING BEI MÜNCHEN, GERMANY  
September 9-13, 2019

---

**Satellites of satellites: the power of  
combining HST photometry and Gaia  
astrometry**

**Sacchi Elena, Space Telescope Science Institute**

In the prevailing Lambda Cold Dark Matter cosmology, galaxies grow continuously in mass through hierarchical assembly of smaller systems, and dark matter halos host substructures down to the resolution limit of the simulations. Hierarchical evolution should occur at all scales, implying that the satellites of the Milky Way should also have companions. The recent discoveries of several ultra-faint dwarf (UFD) galaxy candidates in close proximity to the Magellanic Clouds (MCs) provide a unique opportunity to test and understand this process. In this context, I will present the results obtained for the UFDs part of the Milky Way 6-D Cosmology program (HST proposal 14734), whose stellar populations and color-magnitude diagrams (CMDs) were analyzed to recover their detailed star formation histories (SFHs) with the synthetic CMD method, and understand the role that different parameters (stellar feedback, gas content, interaction state, environment) play in shaping their evolution. Additionally, Gaia DR2 proper motions were used to better constrain the possible dynamical association of these dwarfs with the MCs and retrace the history of formation and interaction of the Magellanic system.