Formation and Evolution of Galaxy Outskirts
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What do galaxies look like beyond 31 mag/arcsec^2?

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Abstract. Detection of optical surface brightness structures with magnitudes fainter than 30 mag/arcsec^2 has remained elusive in current photometric deep surveys. We are conducting a new imaging strategy to cross that frontier and address the study of outskirts of galaxies and theories of galaxy formation.

Keywords. galaxies: evolution, galaxies: formation, galaxies: halos, techniques: photometric

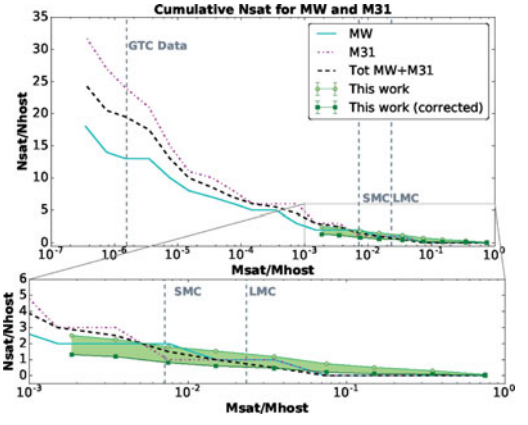

Figure 1. Fraction of satellites per host depending on the mass ratio between the host and the satellite. Green area indicates the average number of satellites found in a spectroscopic SDSS sample of 150 MW-like galaxies. Down to 10^8 $M_\odot$ satellites, the abundance of satellites both in M31 and MW are representative of the general population. Upcoming data allow us to explore whether this is also the case down to 10^5 $M_\odot$ satellites (Cebrian & Trujillo 2016, in prep.).

Cosmological simulations predict a plethora of substructures surrounding galaxies when observed beyond 30 mag/arcsec^2 (Cooper *et al.*, 2010). Using the 10.4m Gran Telescopio de Canarias telescope and other ∼1m-facilities such as OAJ and LCOGT, we are breaking the 30 mag/arcsec^2 frontier. To do this, the flat-fielding and an exquisite treatment of the sky substraction and PSF effects are critical (Trujillo & Fliri 2015; Fliri & Trujillo 2016). These data will allow us to study the population of satellite galaxies with a depth comparable to that achieved in the Local Group (see figure 1).

References

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