

Extended galaxies in deep extragalactic fields are not an annoyance but a potential treasure trove (Fernando Buitrago)

Friday 13 September 2019 12:20 (18 minutes)

Future JWST or any giant telescope imaging, intended to investigate the high- z Universe, are “contaminated” by a number of extended galaxies. They are either massive and/or low- z galaxies. Similarly, synoptic surveys like Euclid or LSST will commonly find such objects. We started their analysis with the study of the six most massive ($>5 \times 10^{10} M_{\odot}$) galaxies at $z < 1$ in the Hubble Ultra Deep Field. The outer ($10 < R/\text{Kpc} < 50$) parts of these early-type galaxies host 5-20% of their stellar mass, at variance with what happens for same-mass late types ($<5\%$). This is key to explain the inside-out growth of massive galaxies, being these outer envelopes progressively created by the continuous merging with surrounding satellites, and therefore being in their own right stellar haloes detected in our sample at a median redshift $z = 0.65$! We are extending our analysis to similar galaxies in all HST CANDELS fields and I will show how to deal with these large galaxies in order to retrieve accurate masses and structural parameters. Additionally, only a good characterization of their light, i.e. an optimized data reduction and an excellent PSF characterization, could unveil the properties of both the very low surface brightness galaxy outskirts and their minor galaxy neighbours. Finally, our experience enables us to explore extreme objects such as IC1101, the largest galaxy ever detected, for which I will provide updated sizes, surface brightness profiles and for the first time a stellar mass based on HST and dedicated MUSE data.

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Track Classification: Black Hole/Galaxy Co-Evolution