

The formation of Passive Disc Galaxies found at redshifts between 1 and 3

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Abstract

How a galaxy becomes passive, but still showing a disc-dominated light profile (aka, Passive Disc Galaxy, PDG), can be explained by different mechanisms, each with strong or weak points (e.g., Bundy et al.2010). By going to early cosmic times, one limits the mechanisms inducing the PDG phase to those which act faster, thus reducing the scenario degeneracy. This work exploits an easy colour selection based on infra-red bands (Ks, 4.5um, 8.0um, 24um), which selects $z \lesssim 1$ galaxies with reduced or no dust emission (either heated by star-formation or galactic nuclei activities), candidates for passive or dust-free galaxies. Based on the morphological analysis based on HST-ACS+WFC3 imaging, one can then select disc-dominated sources among the colour-selected sample. The panchromatic data-set available in GOODS-N/S allows one to compare the rest-frame optically bluer and redder selected samples, allowing one to explore the mechanism(s) inducing the PDG phase. Specifically in GOODS-N, we explore the medium-band SHARDS data-set to further characterise these sources (by means of, eg, stellar-mass or age).