Ultra Massive Passive Galaxies at z∼1.7

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Abstract. At redshift z∼1.7 the Universe was at the peak of its star-formation activity. It is thus a puzzle why some galaxies, many of them very massive ($M_* \geqslant 10^{11}$ M⊙), had already chosen to stop forming stars. These ultra-massive galaxies, guaranteed to be the central galaxies of their host dark matter halos, must have attained very high rates of star formation to assemble their stellar masses in such a short amount of time. Using the largest (to date) K-selected gzK_s survey of passive galaxies (in an effective area of ~ 27.5 deg^2) we study the demographics of these dead monsters, hoping to help understand the quenching mechanism that shut them down.

Keywords. galaxies: evolution, galaxies: high-redshift, galaxies: surveys.
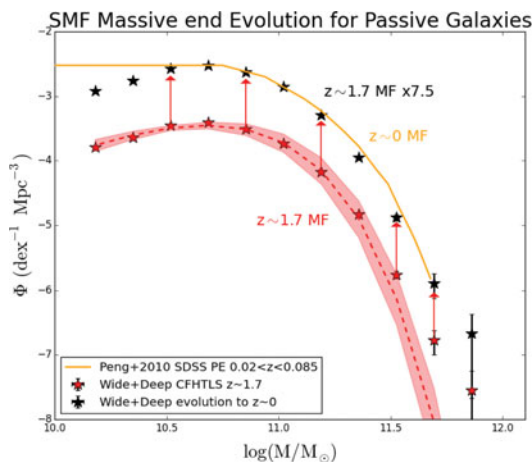
(*a*) A combination of the CFHTLS Deep + Wide surveys and the Vipers K-band and WIRDS surveys, allows us to construct the largest catalog of K-selected gzKs passive galaxies at z∼1.7.

(*b*) Using this sample we are able constrain the massive end of the stellar mass function with unprecedented precision.

(*c*) Simple density evolution (as seen in the Figure in red arrows) of the z∼1.7 MF, matches the z∼0 MF (yellow curve from Peng *et al.* 2010, *ApJ*, 721, 193); the number density of galaxies increases uniformly independently of mass.

(*d*) This simple density evolution suggests that the mechanism that quenches star-formation in massive galaxies does not change with time and indicates a lack of post-quenching mechanisms that could alter M* (e.g., mergers).