

Title: UV light and Ly α halos: could they help us to understand the reionisation?

Abstract: Recent results from e.g. Matthee et al. (2015), Santos et al. (2016) and Sobral et al. (2018a) indicate that the evolution of the Lyman- α (Ly α) luminosity function seems to happen mostly for the fainter Ly α emitters (LAEs) with little to no evolution for the bright ones. This evolution can likely be explained by a patchy reionisation happening first around the brightest LAEs, where a more neutral intergalactic medium should lead to a more extended Ly α emission. Detailed morphological analysis of these sources will shed some light on how the epoch of reionisation happened by pinpointing the escape mechanisms for Ly α photons through. By comparing the size of the UV emission emanated from the hot and young stars and with the size of the Ly α diffuse halos and correlating that with the line emission strength, can we have imprints that help us to understand the reionisation geometry at galactic scale? The recent UV morphological analysis of LAEs by Paulino-Afonso et al. (2018a) shows little to no evolution up to $z \sim 6$. The Ly α counterparts of the sample started to be studied and pinpoint key variables that the upcoming JWST mission and complementary facilities should look for to further our understanding on the physics that govern the earliest episodes of cosmic galaxy formation and their evolution.