

X16a Abundance of compact [OIII] emission-line regions (Green Beans) in $H\alpha$ emitters at $z \sim 2.3$ with JWST JADES Observations

Nuo Chen (University of Tokyo), Kentaro Motohara (NAOJ, University of Tokyo)

We present a rest-frame optical morphological studies of 111 $H\alpha$ emitters (HAEs) at $z = 2.1 - 2.5$ in the ZFOURGE-CDFS field from JADES JWST/NIRCam imaging. The ultra-deep, high-resolution, NIRCam data enable us to take a first look at the emission-line morphology of HAEs from $10^8 M_\odot$ to $10^{10} M_\odot$. We make an emission-line map of each HAEs from flux excess in the F150W filter, and discover a large population of compact [OIII] emission-line regions (“Green beans”), which are similar to the so-called “Green Pea” galaxies in the local universe. We have identified 186 Green beans with $EW_{[\text{OIII}]} > 300\text{\AA}$ from 96 HAEs and 15 of the green beans have extremely large $EW_{[\text{OIII}]} > 1000\text{\AA}$. We investigate the physical properties relationship between these beans and their host galaxies, such as the stellar mass (M_*), star formation rate (SFR). Furthermore, we find most of the locations of these “Green beans” are consistent with the galaxy clumps. Combining these new results, we speculate these “Green beans” as a common feature of star-burst regions in high redshift universe and may be the origin of ionized bubbles during cosmic reionization or the progenitor of global clusters in the local universe.