EVOLUTION IN THE CONTINUUM MORPHOLOGICAL PROPERTIES OF Lyα-EMITTING GALAXIES FROM z = 3.1 TO z = 2.1

We present a rest-frame ultraviolet morphological analysis of 108 z = 2.1 Lyman Alpha Emitters (LAEs) in the Extended Chandra Deep Field South (ECDF-S) and compare it to a similar sample of 171 LAEs at z = 3.1 . Using Hubble Space Telescope (HST) images taken as part of the Galaxy Evolution From Morphology and SEDs survey, Great Observatories Origins Deep Survey, and Hubble Ultradeep Field surveys, we measure the size and photometric component distributions, where photo- metric components are defined as distinct clumps of UV-continuum emission. At both redshifts, the majority of LAEs have observed half-light radii < 2 kpc, but the median half-light radius rises from 0.97 kpc at z = 3.1 to 1.41 kpc at z = 2.1. A similar evolution is seen in the sizes of individual rest-UV components, but there is no evidence for evolution in the number of multi-component systems. In the z = 2.1 LAE sample, we see clear correlations between the LAE size and other physical properties derived from its SED. LAEs are found to be larger for galaxies with larger stellar mass, larger star formation rate, and larger dust obscuration, but there is no evidence for a trend between equivalent width and half-light radius at either redshift. The presence of these correlations suggests that a wide range of objects are being selected by LAE surveys at that redshift, including a significant fraction of objects for which a massive and moderately extended population of old stars underlies the young starburst giving rise to the Lyα emission.

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