

## X17a The discovery of dual and offset “little red dots” with a pixel-by-pixel color selection method

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Deep IR observations by JWST have revealed a new population of high-redshift, red, and compact objects known as “little red dots” (LRDs). Based on the detection and analysis of broad Balmer emission lines, previous studies have suggested that LRDs may be low-luminosity AGNs hosting overmassive black holes. However, the nature and the evolution of LRDs are still unclear. In this study, we develop a new selection technique of pixel-by-pixel color selection method and apply this method to JWST/NIRCam imaging data from COSMOS-Web. As a result, we identify LRDs with extended components or nearby companions overlooked in the typical photometric selection methods, which rely on aperture color and compactness. Among them, we found LRDs that appear to be merging with other LRDs (dual LRDs) or galaxies (offset LRDs, i.e., LRD-galaxy close pairs). The overabundance of dual LRDs suggests that LRDs have an excess clustering on kilo-parsec scales, which may suggest that these LRDs are AGNs activated through interactions. From the high offset LRD fraction in our sample, we, for the first time, propose an evolutionary scenario linking LRDs to the known AGN and galaxy populations at lower redshifts.