Identifying Imaging Artifacts and Assembling a Galaxy Sample in DELVE DR3

With modern galaxy surveys, we are able to study the nature of dark matter and dark energy by probing the large-scale structure with weak-lensing and galaxy clustering. With how sensitive these probes are, we must first ensure that we are using a pure galaxy sample. We developed tools which are meant to help create a catalog of quality galaxies within the DELVE footprint. These tools consist of methods to identify astrometric offsets, develop coverage maps, assemble a catalog of galaxies based on the Dark Energy Survey's Y6 Gold criteria, create cutouts of objects within DELVE tiles, and plot objects in multiple different forms. Over the course of the summer term, 77 tiles were identified by our tools as having astrometric offsets or a bad exposure, both of which can cause disastrous errors in our attempts to probe the large-scale structure. These tools will help advance the work being done by the cosmic shear working group as they assemble their shear and galaxy catalog.