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Ultra-diffuse galaxies in Stripe 82 Clusters

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Ultra-Diffuse Galaxies (UDGs) are low surface brightness galaxies with a very low stellar mass component but their sizes are comparable to the Milky Way. To survive in the cluster environments where they have been observed these galaxies must contain significant amounts of dark matter as the strong tidal fields would normally tear diffuse low-mass galaxies apart. UDGs are hard to detect and classify as they are very faint and have the appearance of nearby dwarf galaxies. We are developing a pipeline to identify and analyze UDGs within galaxy clusters within the deep Stripe 82 region of the Sloan Digital Sky Survey. Preliminary results show a significant number of UDGs in all 16 clusters in our sample, at redshifts below 0.15. The abundance of these galaxies in clusters has only recently been recognized, therefore identifying and measuring their properties is key in understanding how they are formed and continue to exist. The resulting UDG sample will allow us to constrain how common UDGs are as a function of halo mass and redshift, and to determine their properties and distribution within the host clusters.

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