



Figure Caption: R_{eff} is the half-light radius of a galaxy measured in kiloparsecs. The half-light radius is the radius within which half of the total light emitted by the galaxy is contained. 1 parsec = 3.086×10^{13} kilometres. Negative R_{eff} offsets indicate smaller sizes.

When star formation ceases in a galaxy (or is “quenched”), we refer to this galaxy as “quiescent”. Today, the Universe is 13.7 billion years old. Since it reached an age of about 3.3 billion years, the amount of star formation occurring per unit time in a given volume of the Universe has been in continuous decline. This has led to a build-up of quiescent galaxies in the Universe.

Observations have shown that quiescent galaxies grow disproportionately more in size than stellar mass as the Universe ages. Many studies have argued that minor mergers (mergers between two galaxies that have very different stellar masses) are responsible for this size growth. To test this hypothesis, it is possible to use the cluster environment as a laboratory. Cluster galaxies have high peculiar velocities, making mergers between them rare. Since minor mergers are expected to increase galaxy size more than they do stellar mass, the most direct way to test this is to measure the stellar mass–size relations in both the cluster and field (small groups of relatively isolated galaxies) environments at a fixed point in time and compare them to see if there is a significant offset in size.

If the predictions of minor mergers driving galaxy size growth are true, cluster galaxies should find themselves inhibited from size growth and will therefore be significantly *smaller* than field galaxies at fixed stellar mass. In Matharu et al., 2019, we conducted this experiment using cluster and field galaxies residing at a time when the Universe was approximately 6 billion years old. The plot in the top right-hand corner shows our main result: **quiescent cluster galaxies are smaller than quiescent field galaxies**. This result supports the case that minor mergers drive the rapid size growth we observe in quiescent *field* galaxies. You can find out more about this work by going to the website below.