

Effect of Galaxy Cluster Environment on Star Formation Rates of Galaxies.

Sandanuwan Kalawila Vithanage¹ & Wayne Barkhouse², 1. University of Ruhuna, Sri Lanka, 2. University of North Dakota, USA.

Galaxy clusters are very dense and virialized systems in the universe. Hence, they are ideal places to study the environmental effects on galaxy evolution. Ram pressure stripping, galaxy harassment and starvation are the major mechanisms that can affect the star formation in cluster galaxies. A sample of ten galaxy clusters were observed using the Mayell 4-m telescope at the Kitt Peak National Observatory. Both Mosaic-1.1 and Mosaic-3 imagers were used for observations. Appropriate redshifted narrow-band H α and r-band filters were used to quantify star formation. H α flux was measured by subtracting the scaled r-band image from the H α image. Galaxy red sequence method was used to statistically identify the cluster members and the selection was compared with the spectroscopic data available for bright galaxies. All radial measurements were normalized using the dynamical radius (R_{200}) of clusters. The radial dependence of the star formation rate (SFR) was measured for the complete sample to identify the effect of cluster environment on star formation. Evidence for quenching of star formation towards the cluster center was found for all types of galaxies at all radii. The sample was divided into dwarf (low-mass) and giant (high-mass) galaxies and the effect of cluster environment on different types of galaxies was studied separately. Dwarf galaxies showed a greater decrease in SFR compared to giant galaxies. Hence ram pressure stripping may have played a major role to quench star formation towards the cluster center.