ENVIRONMENTAL INFLUENCE ON STAR FORMATION OF GALAXIES IN THE LAS CAMPANAS REDSHIFT SURVEY

Y. HASHIMOTO AND A. OEMLER
Yale/OCIW
Dept. of Astronomy, Yale University, New Haven, CT 06511;
Carnegie Obs., 813 Santa Barbara St. Pasadena, CA 91101

1. Method

We have used a sample of 15749 galaxies taken from the Las Campanas Redshift Survey to investigate the effects of environment on the rate of star formation (SFR) in galaxies. For each galaxy we measure SFR by [OII] emission, while a concentration index (C) is used to decouple the effect of the "morphology-environment" relation from the SFR. Galactic environment is characterized *both* by the 3-space local density (ρ) of galaxies and by membership in groups and clusters.

2. Results

Cluster galaxies exhibit *reduced SFR for the same C.* A further division of clusters by "richness" reveals a new possible excitation of "starbursts" in poor clusters. Meanwhile, the SFR of a given C shows a continuous correlation with the ρ, in such a way that galaxies show higher levels of SFR in lower density. Interestingly, this trend is also observed both inside and outside of clusters, implying that physical processes responsible for this correlation might not operate intrinsically in the cluster environment. Galaxies with differing levels of SFR appear to respond differently to the local density. Low levels of star formation are more sensitive to environment inside than outside of clusters. In contrast, high levels of star formation, identified as "starbursts", are at least as sensitive to local density in the field as in clusters.

We conclude that at least two separate processes are responsible for the environmental sensitivity of the SFR.

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