

[Σ GC-25] Environmental Dependence of Star Formation and HI Gas Fraction of Galaxies in the SDSS DR8

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We examine the effect of environment on star formation activity of a sample of galaxy group catalogue given in Tempel et al.(2012) constructed from the Sloan Digital Sky Survey Data Release 8. In order to compare galaxies in different environment, we classify galaxies into two groups: galaxies in low density environment and galaxies in high density environment. After matching colors and apparent magnitudes of the galaxies, we are left with 5912 galaxies in each of the environment category. The fraction of star-forming galaxies in low-density environment is $\sim 34\%$, higher than $\sim 15\%$ in high-density environment. Star-forming galaxies in low density environment have a higher average SFR value than those in high density environment. The bulge-to-disk ratio for galaxies in two different environment shows bimodal distribution. Regardless of the environment, we find galaxies with high star formation rate despite their red ($g-r$) color, for which the origin enhancing their star formation rate is investigated.

[Σ GC-26] ON THE NATURE OF SODIUM EXCESS OBJECTS

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Several studies have reported the presence of sodium excess objects having neutral atomic absorption lines at 5895\AA (NaD) and 8190\AA that are deeper than expected based on stellar population models that match the stellar continuum. The origin of these lines is therefore hotly debated. van Dokkum & Conroy proposed that low-mass

stars ($0.3M_{\odot}$) are more prevalent in massive early-type galaxies, which may lead to a strong NaI 8190 line strength. It is necessary to test this prediction, however, against other prominent optical line indices such as NaD, Mgb, and Fe5270, which can be measured with a significantly higher signal-to-noise ratio than NaI 8190. We identified a new sample of roughly one thousand NaD excess objects (NEOs; $\sim 8\%$ of galaxies in the sample) based on NaD line strength in the redshift range $0.00 < z < 0.08$ from the Sloan Digital Sky Survey (SDSS) DR7 through detailed analysis of galaxy spectra. The novelty of this work is that the galaxies were carefully identified through direct visual inspection of SDSS images, and we systematically compared the properties of NEOs and those of a control sample of galaxies with normal NaD line strengths. Most late-type NEOs have strong H β line strengths and significant emission lines, which are indicative of the presence of young stellar populations. This result implies that the presence of the interstellar medium and/or dust contributes to the increase in NaD line strengths observed for these galaxies.