

Life in Low Density Environments – Field Galaxies from $z=1.0$ to the Present

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Abstract. We present results on the stellar populations of bulge-dominated field galaxies at redshifts up to ≈ 1.0 . The sample consists of non-cluster galaxies observed as part of the spectroscopic observations for the Gemini/HST Galaxy Cluster Project (GCP). Our preliminary results show that the bulge-dominated field galaxies contain younger stellar populations than cluster galaxies at similar redshifts. Future work will include photometry from Hubble Space Telescope and will be aimed at establishing the evolution of the sizes and the mass-to-light ratios for the field galaxies.

Keywords. Galaxies: evolution, galaxies: elliptical and lenticular

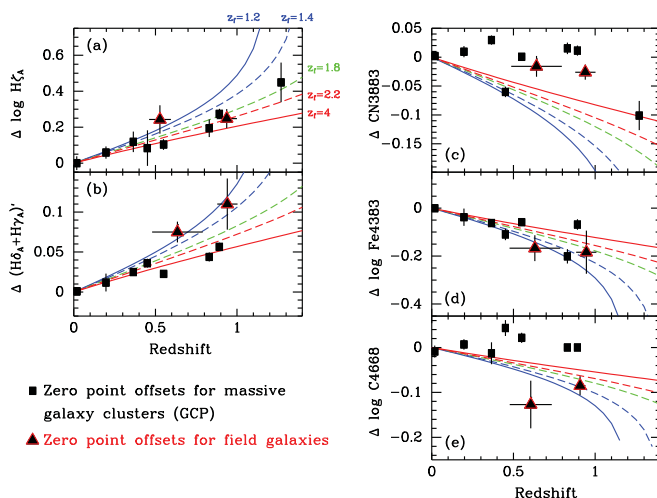


Figure 1. The figure shows, as a function of redshift for the field galaxy samples or clusters, the zero point offsets relative to $z \approx 0$ for the relations between Balmer line strengths and velocity dispersion (panels a and b), and for relations between metal line strengths and velocity dispersion (panels c-e). Predictions for passive evolution models with formation redshifts, z_f , from 1.2 to 4 are shown. These are based on single stellar population models (Maraston & Strömbäck (2011), Thomas *et al.* (2011)). The cluster data are from Jørgensen & Chiboucas (2013), Jørgensen *et al.* (2014) and in preparation. The field galaxies are in general younger than the cluster galaxies at similar redshifts, as shown by the lower formation redshifts.

References

- Jørgensen, I. & Chiboucas, K. 2013, *AJ*, 145, 77
 Jørgensen, I., Chiboucas, K., Toft, S., Bergmann, K., Zirm, A., Schiavon, R. P., & Grützbauch, R. 2014, *AJ*, 148, 117
 Maraston, C. & Strömbäck, G. 2011 *MNRAS*, 418, 2785
 Thomas, D., Maraston, C., & Johansson, J. 2011 *MNRAS*, 412, 2183