Correlation of morphological fraction with redshift in galaxy clusters

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Abstract. Based on 187 galaxy clusters identified from the photometric redshifts of galaxies in the Cosmic Evolution Survey (COSMOS) field(Wen & Han 2011), cluster galaxies brighter than $M_V = -20.5$ are classified into four categories according to their best-fitting templates of the spectral energy distributions (SEDs) provided by Ilbert *et al.* (2009): early-type (including elliptical and lenticular) galaxies (E+S0), spiral galaxies (S), irregular galaxies (Irr), and starbursts (SB). The fractions of these four SED types are presented as the functions of redshift in Figure 1. Fraction of each category varies remarkably with cluster redshift: fractions of normal galaxies (E+S0+S+Irr) tend to decrease with redshift, whilst the starburst proportion tends to increase with redshift. For the normal galaxies, there exists a sequence for the decreasing slopes of morphological fractions. Majority of the galaxies in high-redshift clusters ($z > 1.0$) are experiencing strong star-formation activities, which leads to a very high proportion of starburst.

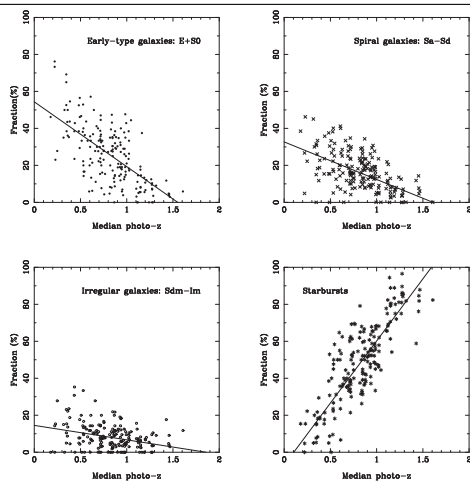**Keywords.** galaxies: classification, galaxies: evolution, galaxies: clusters: general

Figure 1. Fractions of four SED categories as the functions of redshift.

References

Ilbert, O., *et al.* 2009, *ApJ*, 690, 1236
Wen, Z. & Han, J. 2011, *ApJ*, 724, 68