THE GALAXY POPULATION OF TWO DISTANT GALAXY CLUSTERS: 0016+16 (Z=0.54) AND 0939+47 (Z=0.41)

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We analyzed the galaxy population of two distant clusters of galaxies by means of optimized multi filter photometry. To this purpose, broad and narrow band filters have been chosen to detect features characteristic of elliptical (4000 Å break and the Mg_2 band) and E+A galaxies (H_β, H_γ and H_δ in absorption). Cluster membership and morphological types of the galaxies have been obtained by fitting the low-resolution spectral energy distributions with template spectra. Ten templates for E+A galaxies have been built up using Bruzual & Charlot (1993, ApJ 405, 538) population synthesis models with the assumption that these galaxies result from a strong star formation episode occuring in an early-type galaxy.

We obtained per cluster a sample of more than hundred galaxy members, suitable for studing evolutionary effects with a firm statistical basis. Furthermore, the already known E+A galaxies were successfully identified and new ones (29 in Cl0939+47 and 12 in Cl0016+16) were found (Belloni et al., 1995, *A&A* 297, 61). Their projected distribution in the cluster shows that they are more spread out over the field than the ellipticals. Our results confirm the Butcher-Oemler effect and the significance of the E+A galaxies in these clusters (about 20% of all member galaxies) with a large statistical improvement and a systematic approach.

Moreover, the large agreement between the morphological classification obtained with optimized multifilter photometry and that provided by Hubble Space Telescope images (Dressler et al.,1994, ApJ 430, 10) points out the effectiveness of the present approach in the recognition of morphological types of distant galaxies.