## THE COLORS OF H II GALAXIES

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The question of whether H II galaxies are primordial galaxies experiencing their very first burst of star formation or if an older stellar population from an earlier event of star formation is present has not, since it was first posed, been answered. Multi-color surface photometry can provide with the answers.

We report the preliminary results of high spatial resolution CCD surface photometry study in the optical V, R and I filters of 15 H II galáxies from the Nordic Optical Telescope and the J. Kapteyn Telescope at Canary Islands (Telles 1995; Telles & Terlevich 1996). The colors of the starburst continuum and of the underlying galaxy are measured. Some of the main conclusions are:

(i) H II galaxies may be described as two different classes of objects (Telles 1995): Type I H II galaxies ($M_V < -18.5$) are more luminous and show disturbed morphology; Type II H II galaxies ($M_V > -18.5$) are compact and regular. They show no signs of being products of interactions or mergers (Telles & Terlevich 1995).

(ii) The distribution of colors of the underlying galaxy in H II galaxies is similar to the colors of other late type low surface brightness galaxies (LSB) which suggests a close kinship of these with the quiescent phases of H II galaxies. LSB galaxies may be good candidates for being the progenitors of H II galaxies.

(iii) Evolutionary population synthesis models fail to fit quantitatively the observed colors of the *starburst* in H II galaxies. The comparison with recent models shows that the observational errors and the uncertainties in the models are still too large to put strict constraints on their past star formation history. If the models are right to predict the colors of the intermediate and old stellar population, then the colors of the *underlying galaxy* in H II galaxies are not compatible with them being truly young galaxies having their very first burst of star formation.

Telles, E. 1995, Structure and Environment of H II Galaxies, Ph.D. thesis, Cambridge Univ.
Telles, E., & Terlevich, R. 1995, MNRAS 275, 1,
Telles, E., & Terlevich, R. 1996, in The Interplay between Massive Star Formation... eds. D. Kunth et al., Editions Frontières

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## ANALYSIS OF DENSITY PROFILES OF CLUSTERS OF GALAXIES

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We perform a statistical analysis of the galaxy density profiles of clusters of galaxies. We consider all clusters of galaxies with published redshifts $z < 0.12$ in the area covered by the COSMOS/UKST Southern Sky Galaxy Catalogue.

We determine the galaxy density profile for each cluster calculating the projected density of galaxies in rings centered in each cluster and in the magnitude range $[m^* ; m^* + 1.5]$. Here, $m^*$ is the apparent magnitude in the Bj band corresponding to the parameter $M^* = 19.7$ of Schechter luminosity function.

We have computed galaxy counts $n^*$ as the number of galaxies within a radius of 2 Mpc in the same magnitude range used for the determination of density profiles.

In order to provide a suitable model for the 3-dimensional density profile we replaced each cluster by a pseudo-cluster at the same redshift and with the same richness $n^*$ in a Monte-Carlo simulation. All pseudo-clusters are assumed spherically symmetric with a power-law density profile that extends up to a distance $d$ varied in the range 2–6 Mpc. Next, we compute the resulting average profile for these simulations and we compare it with the corresponding average profile of real clusters. The best power-law model that fits the total sample of clusters is $\rho(r) \propto r^{\alpha}$ with $\alpha \simeq 2$. For the richest subsample analyzed we find the best fit with $\rho(r) \propto r^{-1.8}$ while for the sample of poorer cluster we derive $\rho(r) \propto r^{-2.2}$. We conclude that an isothermal model provides a reasonable fit to the density profiles of the total sample of clusters analyzed.

As discussed by Bahcall & Lubin (1992, ApJ 426, 513) the $\beta$-discrepancy in clusters of galaxies arises mainly from the adoption of a steep density profile such as a King model. Our statistical results indicate that the $\beta$-Model is suitable for describing the dynamics of the gas and the dark matter in cluster of galaxies.

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