

CCD PHOTOMETRY OF HII GALAXIES

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We report the first results of a multicolour (broad V,R,I and narrow [OIII] bands) surface photometry study of a small sample of HII galaxies.

The data were obtained at the 2.5m Nordic Optical Telescope (NOT) at La Palma, Canary Islands under subarcsecond seeing conditions. Part of the data has 0.55 arc seconds resolution (FWHM). The data will allow us to investigate the bi-parametric behaviour of the luminosity vs line-width relation.

galaxies - starburst - extragalactic giant HII regions

HII galaxies are dwarf systems undergoing violent star formation. Their optical spectrum is indistinguishable from that of giant extragalactic HII regions.

The relations between $H\beta$ luminosity, size, width of the emission lines and heavy element abundance of giant HII regions and HII galaxies (Terlevich & Melnick, 1981, Melnick *et al.* 1987, 1988) suggest that these systems are gravitationally bound in which the observed emission line widths represent the velocity dispersion of discrete gas clouds in the gravitational potential of the gas-star complex.

Dressler *et al.* (1987) found that the observed scatter in the luminosity line-width relation in elliptical galaxies was due to a bi-parametric behaviour, with the surface brightness being strongly correlated with the second parameter.

One very important clue for the origin of the bi-parametric behaviour of elliptical galaxies may lay in the above described correlations for the youngest galaxies, the HII galaxies. It is of fundamental importance to check if HII galaxies *also* have a bi-parametric behaviour with surface brightness. To answer this question we started a high resolution images survey of HII Galaxies with the NOT. We describe here the first results obtained in a successful run this year.

As we are interested in the structural properties of the burst, we concentrated on the high surface brightness component trying to make best use of the excellent seeing and pixel sampling. We have obtained effective and core radii for the best sampled objects. We found a systematic behaviour of the radius in the luminosity vs line width relation suggesting that indeed a bi-parametric behaviour may be already defined in these young systems.

References

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