The near-infrared colours of H II galaxies

Eduardo Telles[1], Leda Sampson[1], Mauricio Tapia[2], Roberto Terlevich[3], and Daniel Kunth[4]

[1] *Observatório Nacional, Rio de Janeiro, Brasil*
[2] *Instituto de Astronomia, UNAM, Ensenada, Mexico*
[3] *Institute of Astronomy, Cambridge, UK*
[4] *Institute d'Astrophysique de Paris, France*

Abstract. We present preliminary results of our near-infrared *JHK* images of a sample of H II galaxies observed at *UKIRT*. The presence of knots of enhanced emission in the near-IR may indicate the existence of luminous super star clusters which will serve to unveil the basic units which constitute the starburst phenomenon in galaxies. Based on near-IR colours we will further discuss the history of star formation in these bursting dwarf galaxies.

1. Introduction

H II galaxies comprise a class of small, gas-rich, metal-poor, starburst galaxies whose optical appearance is dominated by one or more high surface brightness star-forming regions. These galaxies are excellent examples of the 'starburst' phenomenon, in which a vigorous but short-lived burst of massive star formation has recently occurred.

Despite the indications of youth, optical CCD imaging of a large sample of H II galaxies has revealed that in the majority of objects a faint extended elliptical envelope of late type stars surrounds the compact central starburst regions (*e.g.*, Thuan 1983; Kunth *et al.* 1988; Papaderos *et al.* 1997; Doublier *et al.* 1997; Telles, Melnick & Terlevich 1997). Optical observations, combined with evolutionary synthesis models have shown that these faint components are probably composed of stars older than a few Gyr (Telles & Terlevich 1997). With the use of near-infrared imaging the contamination due to the emission from the hot young stars and line-emission from ionized gas of the burst will be minimized, allowing stronger constraints on their star-formation histories.

2. Images

Our near-IR images of H II galaxies have revealed super-star-cluster-sized objects (SSC) within the star-forming regions (see Figure 1), similar to those detected in *HST* ultraviolet images of starburst galaxies (Meurer *et al.* 1995; Vacca 1997; Ostlin *et al.* 1998). In many cases these knots form continuous structures, which suggests that star formation may have propagated across the starburst region.

Integrated colours of H II galaxies seem to be overall not compatible with stellar evolutionary model predictions. The infrared magnitudes and colours of
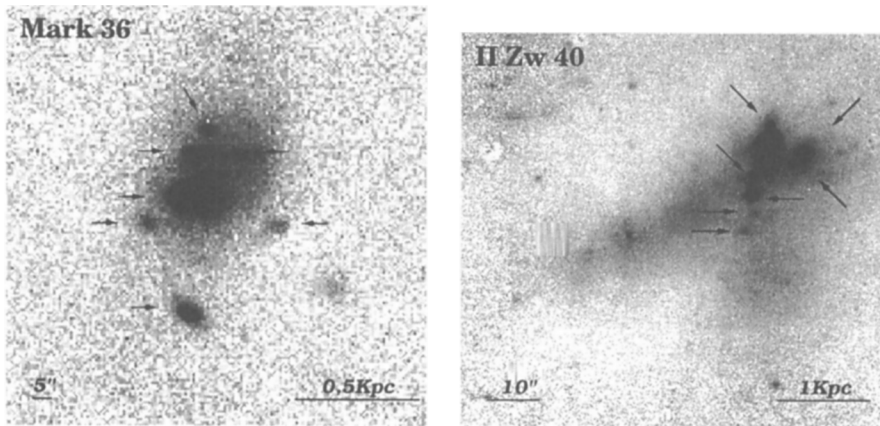
Figure 1.   *J*-band images of two famous examples of H II galaxies.

individual starburst knots will greatly enhance our knowledge of their ages and stellar populations. The analysis of these data is underway and the results will be presented in a forthcoming paper.

Understanding the formation and evolution of these SSCs may play a fundamental role in the study of the starburst phenomena in galaxies.

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