

Comparison of NIR and H α emission from the HII regions of M100

S. J. Chan¹ and J. E. Beckman^{2,3,4}

¹43 Tamar Way, Didcot, OX11 7QH, United Kingdom. email: sjchan2012@gmail.com

²Instituto de Astrofísica de Canarias 38205 La Laguna, Spain. email: jeb@iac.es

³CSIC, 28006 Madrid, Spain

⁴Department of Astrophysics, University of La Laguna, E-38200 La Laguna, Tenerife, Spain

Abstract. We measure the flux values in the 4 Spitzer-IRAC bands, of a sample of 78 isolated luminous HII regions in the grand design galaxy M100. We estimate the near-IR luminosities and compare them with the H α -luminosities from the Knapen HII-region catalogue. We find a strong, and expected positive correlation between the total IR luminosity and the H α luminosity, but no significant correlation between the luminosity and the IR temperature of the regions.

Keywords. HII regions — galaxies: individual (M100) — infrared: galaxies

We have measured the spectral energy distributions of 78 isolated bright HII regions in M100 in the 3.6 μm , 4.8 μm , 5.5 μm and 8.0 μm IRAC bands of Spitzer [see Spitzer Science Center (2006) and Chan & Beckman (2012)], comparing the NIR temperatures and luminosities with the H α luminosities of the HII regions from Knapen *et al.* (2004) and Knapen (1998). Our chief results are:

- There is an excess at 3.6 μm due to PAH emission. Colour temperatures were estimated from the other three bands.
- There is a strong correlation between $L(\text{H}\alpha)$ and $L(\text{IRAC})$ (see Fig. 1).
- The IR colour temperature shows no correlation with the luminosity; a model in which dust in a spherical zone around the stars is evaporated could explain this.

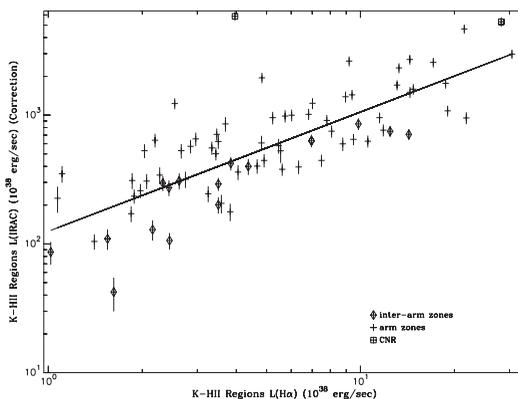


Figure 1. The relation between $L(\text{H}\alpha)$ and $L(\text{IRAC})$.

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