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# THE H$\alpha$ NATURE OF THE UNIVERSE AT Z∼0.83

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**We present here the results of a survey searching for current-star forming galaxies at at z∼0.83. Objects are selected by their emission in the H$\alpha$ line through the narrow band filter technique.**

The survey was carried out in the Extended Groth Strip (EGS), covering an area of ∼700 sq. arcmin and reaching a limiting flux of $\sim 2\times10^{-17} erg s^{-1} cm^{-2}$ in the deepest field. Objects at lower redshift have been rejected with a B-R,R-I color-color empirical criteria. Stars were rejected with the stellarity parameter given by sextractor. Optical spectroscopy provided by the DEEP team for 72 objects shows that our efficiency in selecting emission line galaxies is ∼80%, although 20% are selected by their emission in the [OIII]$\lambda\lambda 4959, 5007$ lines.

With this sample we have computed the H$\alpha$ luminosity function for the star forming galaxies at z=0.83 (see Figure 1). As it can be seen our luminosity function is close to the Tresse et al. (2002) luminosity function. However there is a big difference in the high luminosity regime with the one obtained by Hopkins et al. (2000). This discrepancy could come from the inclusion of objects at higher redshifts (up to z∼1.9) by these authors. Assuming an average extinction of $A_{H\alpha}$=1 and a concordance cosmology, the inferred star formation density is $0.13^{0.04}_{-0.02} M_\odot a^{-1} Mpc^{-3}$. This value is in good agreement with other surveys (Tresse et al. 2002, Pérez-González et al. 2005), being a factor of ∼10 higher than the local value.

A comparison among different star formation rate tracers has been carried out. In order to do consistent comparison we have corrected the effect of the extinction with the TIR/FUV ratio. We find that estimated star formation rates from UV, H$\alpha$ and TIR are in good agreement when properly corrected for extinction. Cardiel et al. (2003) found that H$\alpha$ underestimates the SFR as the infrared luminosity increases. When we plot the $SFR_{FIR}$ /SFRH$\alpha$ ratio versus $L_{FIR}$ for our sample we see that the points follow the unity relation (see Figure 2). The discrepancy could be caused by the way extinction is corrected. Cardiel et al. used the Balmer decrement which could underestimate the real extinction.

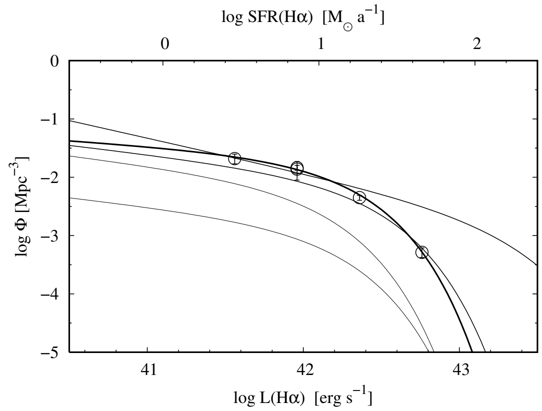


Fig. 1. Circles are the values obtained in this work. The thickest line is the best fit to a Schechter function. Lower thick line is from Tresse et al. (2002) and upper thick line is from Hopkins et al. (2000).

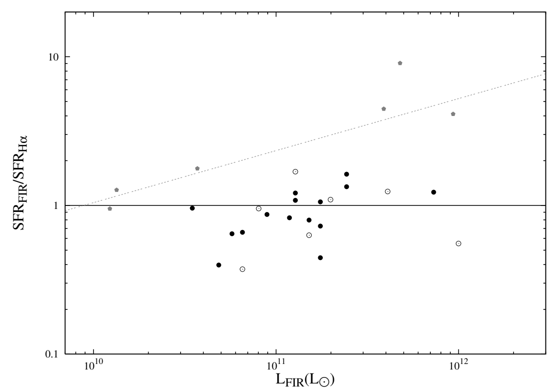


Fig. 2. $SFR_{FIR}$ /SFRH$\alpha$ vs. $L_{FIR}$. Circles are our data. The line represents the unity relation. The grey points are from Cardiel et al. 2003.

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