

Statistical Studies on the Visible and Hidden Star Formation in the Universe

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Abstract. We select far-infrared (60 μm) and far-ultraviolet (1530 \AA) samples of nearby galaxies. We derived distributions of the bolometric luminosity of young stars in both samples: they are found to be consistent with each other for galaxies of intermediate luminosities but some differences are found for high ($>5 \times 10^{10} L_{\odot}$) luminosities. The ratio of the total IR luminosity to the FUV one is found to increase with the bolometric luminosity in a similar way for both samples up to $5 \times 10^{10} L_{\odot}$. Brighter galaxies are found to have a different behavior according to their selection: the $L_{\text{TIR}}/L_{\text{FUV}}$ ratio of the FUV selected galaxies brighter than $5 \times 10^{10} L_{\odot}$ reaches a plateau whereas $L_{\text{TIR}}/L_{\text{FUV}}$ continues to increase with the luminosity of bright galaxies selected in FIR. The volume averaged specific star formation rate (SFR per unit galaxy stellar mass, SSFR) is found to decrease toward massive galaxies within each selection. The SSFR is found larger than that measured for optical and NIR selected sample for the whole mass range for the FIR selection and for masses larger than $10^{10} M_{\odot}$ for the FUV selection. Luminous and massive galaxies selected in FIR appear as active as galaxies with similar characteristics detected at $z \sim 0.7$. Details are presented in Buat *et al.* (2006).

Keywords. infrared: galaxies, ultraviolet: galaxies, dust extinction, galaxies: starburst

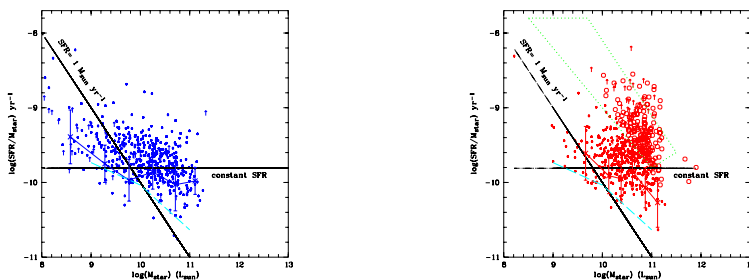


Figure 1. The specific SFRs (SSFRs) from our FUV- and FIR-selected samples. While the SSFR of FUV galaxies are consistent with optical/NIR ones, luminous and massive galaxies in the FIR galaxies are as active as those at $z = 0.7$.

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References

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