

Intergalactic star formation around NGC 5291

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Numerous instances of intergalactic star forming regions have been recently reported (see Duc *et al.* in this proceedings book). They are fueled by gaseous material expelled from parent galaxies. One spectacular example is the HI ring-like structure around the interacting system NGC 5291 (Malphrus *et al.* 1997) which hosts numerous HII regions (Duc & Mirabel 1998). In order to study how star formation proceeds in this specific environment, we have combined ultraviolet (Gallex), H α , 8 μ m (Spitzer) and HI (VLA B-array) images of this system.

We have found that, qualitatively, the three star-forming indicators – ultraviolet, H α and 8 μ m bands – have a very similar morphology. The normalised infrared emission at 8.0 μ m which was previously shown to be dominated by PAH bands (Higdon *et al.* 2006) is comparable to the integrated emission of dwarves of the same metallicity and to the emission of individual HII regions in spirals. The 8.0 μ m emission in the intergalactic environment is therefore an estimator of the star formation rate (SFR) as reliable as for spirals. There is a clear excess of ultraviolet emission compared to individual HII regions in spirals, i.e. the [8.0]/[NUV] and [H α]/[NUV] flux ratios are on average very low although there are some large variations from one region to the other. While the scatter of [8.0]/[NUV] is largely due to large spatial variations of the dust extinction, as traced by the HI column density, the scatter of [H α]/[NUV] ratio is best explained by age effects. A model of the evolution [H α]/[NUV] with time favours young but already fading quasi-instantaneous starbursts. The total SFR measured in the intergalactic medium surrounding NGC 5291 is up to 1.3 M $_{\odot}$ yr⁻¹, a value typical for spirals, assuming the standard SFR calibrations are valid.

References

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