THE ANATOMY OF STARBURSTS IN THE ULTRAVIOLET

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We have obtained *Hubble Space Telescope* ultraviolet (UV; $\lambda_c = 2320$ Å) images of nine starburst galaxies using the FOC, with the aim of characterizing the anatomy of starbursts with ~pc resolution at a wavelength where hot massive stars dominate the luminosity output. The images have been analysed in detail, and full results can be found in Meurer et al. (1995).

Starbursts have a highly irregular UV morphology both in terms of isophote shape and surface brightness profile. This is true even if the numerous clusters they contain are removed from the images. Despite this irregularity, most (7/9) have similar effective surface brightnesses, which corresponds to a star formation rate of 0.7 $M_\odot$ Kpc^{-2} yr^{-1} in stars with mass 5 – 100 $M_\odot$, (those we detect directly). This similarity suggests that a negative feedback mechanism places an upper limit on the star formation intensity. The lower limit may be set by our UV brightness selection.

On average about 20% of the UV light comes from compact clusters. The rest comes from diffusely distributed high mass stars. Thus starbursts manufacture star clusters at a high efficiency, but clusters are not the building blocks that starbursts are made out of. The brightest clusters are preferentially found near the center of starbursts, suggesting that cluster formation may be related to the mechanism that limits their starburst intensity. The clusters have luminosities and sizes consistent with the hypothesis that they are young globular cluster. The cluster luminosity function is a power law of index ~–2. Although very different in form from that of globular clusters, it does not rule out the proto-globular cluster interpretation since the clusters in starbursts need not be coeval.

References

Meurer, G.R., Heckman, T.M., Leitherer, C., Kinney, A., Robert, C., and Garnett D.R. (1995) *Astron. J.*, accepted.

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