

# Star Formation and Stellar Populations in Ring Galaxies

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Colliding ring galaxies provide a remarkable testbed for the study of star formation in perturbed galaxies. In the process of passing through a disk system, a small perturbing galaxy generates a density wave of stars and gas which expands into the host disk. This triggers a wave of star formation. As the star forming wave passes through the host galaxy, progressively older burst populations may be found interior to the ring. As part of a multiwavelength study of ring galaxies, we have performed optical and infrared imaging using the Kitt Peak 2.1m telescope. These images are used to explore the relation between stellar density wave amplitude and star formation rate. Color gradients are searched for which would indicate the presence of an aging burst population interior to the ring.

Results show that the star formation regions (indicated by  $H\alpha$  emission line morphology) are to be found exterior to the advancing stellar density wave (indicated by K band images). An example of this is shown in Fig. 1. These results suggest that cloud-cloud collisions are the dominant cause of the star forming bursts (Appleton and Struck-Marcell, 1987).

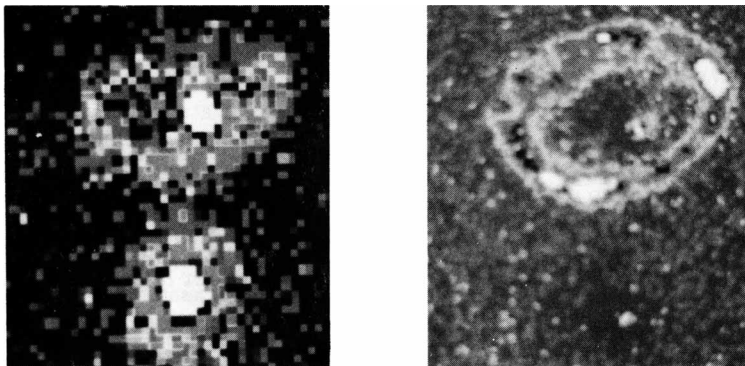


Fig. 1: K band, to the left, and  $H\alpha$  images of the ring galaxy LT41 showing the large ongoing star formation in the ring outside the stellar density wave peak.

Color gradients are also noted with progressively redder colors seen towards the centers of the ring. This is consistent with an evolutionary population sequence, with a progressively older burst population being found towards the centers of the ring systems.

## References

Appleton, P. N. and Struck-Marcell C., 1987, *Ap.J.*, **318**, 103.