CIRCUMNUCLEAR REGIONS OF ACTIVE AND NON-ACTIVE BARRED GALAXIES

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I discuss the role of galactic bars in the fuelling of (circum)nuclear activity. Since the majority of all galaxies are barred, the presence of a bar in a Seyfert galaxy cannot be the sole reason for their activity, although it appears to be a necessary condition for activity. Two options for further work are being explored, high-resolution near-infrared imaging of samples of active and non-active galaxies, and detailed case studies of selected galaxy cores.

1. Are Seyfert hosts preferentially barred?

Whereas starburst hosts are preferentially barred, it is still a matter of debate whether the same is true for AGN hosts. Ho *et al.* (1997), who compared the RC3 morphologies of the AGN hosts as defined from their spectral survey with those of the non-active galaxies in the survey, and Mulchaey & Regan (1997), who studied the bar presence from near-infrared (NIR) imaging of a Seyfert and a control sample of galaxies, confirmed previous results that similar fractions of active and non-active galaxies are barred.

Peletier *et al.* (1998), using higher resolution NIR images of the CfA sample of Seyferts and of a control sample, and interpreting the presence of rings as direct indicators of bars, conclude that significantly more Seyferts than non-Seyferts are barred. Peletier *et al.* (1998) also find that some 75% of the non-active galaxies are barred. This is in line with the results of Mulchaey & Regan (1997) who report a similarly high bar fraction. The results confirm the conclusion by Shlosman *et al.* (1989) that a large scale stellar bar is no guarantee for central activity, but is rather a necessary condition for such activity.

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2. Inflow case studies: the core of M100

The core region of M100 shows strong circumnuclear star forming activity, concentrated in a pair of spiral armlets. This star forming region lies between two inner Lindblad resonances, and separates two parts of the same bar structure, as shown by Knapen *et al.* (1995b) using a self-consistent dynamical model. Wozniak *et al.* (this meeting) have obtained ISO 6.75 and 15μ images, whose main emission peaks confirm the presumed reddened star forming sites near the end of the inner bar component (K1/2; Knapen *et al.* 1995a). Our new J, H and K-band images confirm not only the star forming nature of K1 and K2, but also that dynamically young stars contribute significantly to the K emission in the core region (cf. Knapen *et al.* 1995a). This is in agreement with results by Wada (this meeting).

3. Implications and future work

Our results, that most of the non-active galaxies and probably all of the Seyfert galaxies have stellar bars, confirm that (1) such non-axisymmetric structures are necessary for central fueling, and that (2) an additional mechanism, most probably the availability of critical gas masses, is required to complete the process (as suggested by Shlosman et al. 1989). There is ample evidence from theory, modelling and observational studies that bars are important for channelling the inflowing gas. In concentrating on the study of large-scale bars, as done to date, we may not be studying the right scales, or the right phenomena. If the discriminating factor determining the occurrence of central activity lies either at very small scales, or in e.g. central mass distributions, new observational techniques are needed, such as adaptive optics (AO) imaging. With AO, one can achieve resolutions around 100 mas, thus reaching scales of around 10 pc in nearby AGN (see, e.g., Rouan *et al.*; Knapen *et al.*, this meeting).

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