

Neutral Hydrogen in the Bar of NGC 4151

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1. Introduction

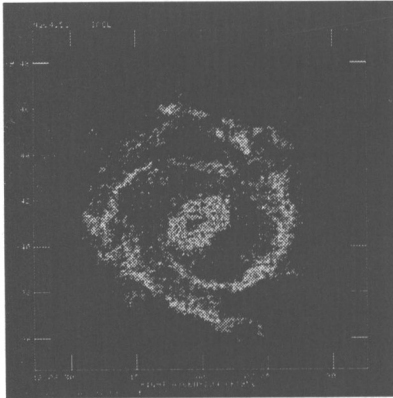
Bars are thought to play a crucial role in the fueling of AGN (see e.g., Mundell et al., in these proceedings and references therein), and as part of a project to investigate this, we have studied the neutral hydrogen structure in the bar of the Seyfert 1.5 galaxy NGC 4151.

2. Observations and Discussion

High-sensitivity VLA observations have enabled us to image the neutral hydrogen emission from the bar of NGC 4151 in unprecedented detail, and is a continuation of the work by Pedlar et al. (1992).

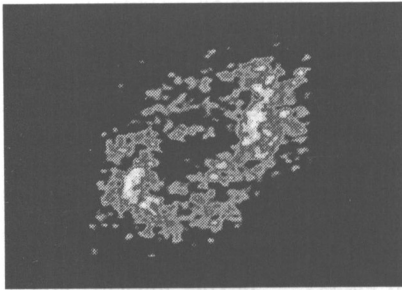
Figure 1 shows images of integrated neutral hydrogen emission. The large scale emission extends over approximately 20 kpc and the outer part consists of a well-defined two-armed spiral which originates from a fat bar at a radius of about 5 kpc. The bar shows complex structure, including two sharp features which are reminiscent of the shocks seen in many simulations, e.g., Athanassoula (1992). These features appear to join the central 1-kpc ring discovered by Vila-Vilaró et al. (1994), and for which there appears a partial counterpart in neutral hydrogen emission.

Recent MERLIN observations of neutral hydrogen absorption (Mundell et al. 1995) have revealed evidence for a torus of neutral hydrogen, 50pc in size which is thought to be a part of the fuel-chain leading to the active nucleus, and also responsible for collimating the nuclear *UV* radiation. Work is in progress to follow the neutral hydrogen emission structure to the region within the 1-kpc ring and hence infer its relation, if any, to the the proposed torus. In addition,



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VLA image of integrated HI emission from NGC4151 showing large-scale spiral structure and bar.



High-resolution image of the bar in NGC4151 showing bright shock-like features.

Figure 1. VLA Images of the NGC 4151

we are studying the detailed spectral structure of the bar to look for signs of streaming motions.

References

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