

NEUTRAL HYDROGEN OBSERVATIONS OF THE DWARF ELLIPTICAL GALAXIES NGC 185 AND NGC 205

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In this note we report the detection and mapping of neutral hydrogen in two dwarf elliptical galaxies NGC 185 and NGC 205. Both are companions to M 31 and both are classified as peculiar owing to the presence of obscuring dust patches near their nuclei. Both galaxies also contain a small population of blue, presumably young stars (Hodge 1963, 1973).

Eighteen antennae of the VLA facility of the National Radio Astronomy Observatory were used with a 32 channel spectrometer to obtain an angular resolution of ~ 1.15 and a velocity resolution of 6.28 km/sec.

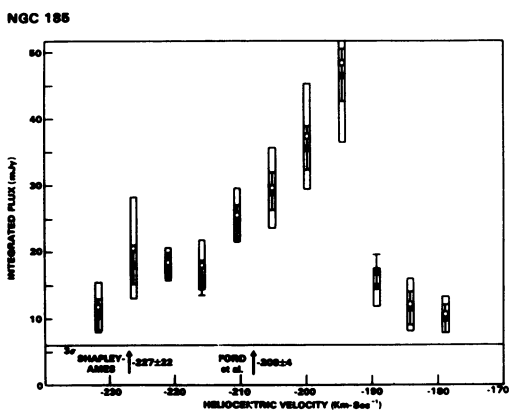


Fig. 1a

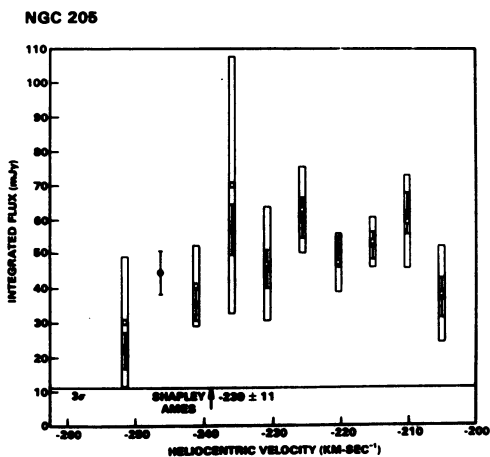


Fig. 1b

Figures 1a and 1b show the global HI emission profiles for each system. We are unable to detect any significant rotation associated with the hydrogen in NGC 185. However, the HI in NGC 205 exhibits many of the properties related to a rotating disk. Thus, it is not surprising that the profile shapes are markedly different.

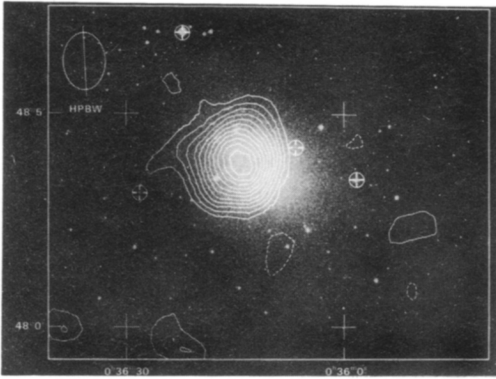


Fig. 2a NGC 185

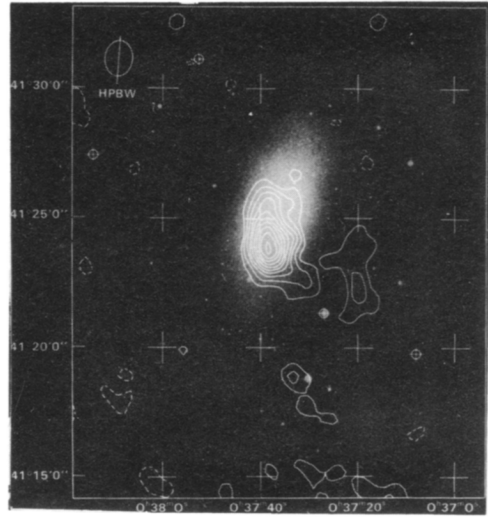


Fig. 2b NGC 205

Figures 2a and 2b show the distribution of atomic hydrogen in both galaxies, assuming the gas to be optically thin. A single, not highly resolved feature is seen in NGC 185. In the case of NGC 205, an extended feature with some structure is observed. For these systems, $M_{\text{H}} \sim 2 \times 10^5 M_{\odot}$, and $M_{\text{H}}/L \sim .0013$.

In each system the centroid of the gas is significantly offset from the center of the galaxy. Furthermore, the gas in NGC 185 does not coincide with the well known dark clouds, for the centroid is displaced by $\sim 30''$ to the northeast of the galaxy center. In the case of NGC 205 the gas is offset by about $1'$ southwest of the center, but by comparison with NGC 185 there is not such a large discrepancy in the association of the HI with the dust patches. Also, in this system the material rotates with a maximum observed velocity of ~ 29 km/sec at radial distance of ~ 1.5 . The observations of NGC 205 confirm some of the findings reported by Unwin (1980).

It is very difficult to understand how $\sim .01\%$ of the total mass of these objects has failed to coalesce at the bottom of the galaxien potential well. Perhaps the explanation is associated with the current burst of star formation that is occurring in these peculiar elliptical systems.

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