

NEUTRAL HYDROGEN IN THE SEYFERT GALAXY NGC 3227

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We present VLA C and D array neutral hydrogen observations of the Seyfert galaxy NGC 3227. The neutral gas is highly disturbed due to the interaction with the nearby elliptical, NGC 3226 and D array observations (with resolution of $40''$ and velocity resolution of 40 km s^{-1}) revealed 2 extensive plumes stretching 88 kpc south and 44 kpc north of NGC 3227. Complex dynamics were observed in the disk, which subsequent C array observations (resolution of $19''$ and 20 km s^{-1}) resolved into two components: the galactic disk, which is not significantly disrupted by the interaction and is undergoing predominantly solid body rotation out to a radius of 7 kpc, and an anomalous velocity cloud (with a velocity of 170 km s^{-1} above systemic) which appears to be associated with the northern plume.

There is evidence of a bar in the integrated hydrogen emission of the disk, and a 'hole' in the HI emission can be seen at the centre of the galaxy. (We are, however, unable to determine, from C array observations, whether this is due to absorption against the 20 mJy continuum source or to the absence of neutral gas). There is no obvious evidence of high velocity gas associated with the Seyfert nucleus.

Neutral hydrogen masses, derived from flux densities measured from naturally weighted data, in the individual galaxy components are as follows:

- Northern Plume $0.082 \times 10^9 M_{\odot}$
- Southern Plume $0.167 \times 10^9 M_{\odot}$
- Cloud $0.316 \times 10^9 M_{\odot}$
- Disk $0.53 \times 10^9 M_{\odot}$

Rubin & Ford, 1968, (*Astrophys.J.*, **154** 431.), conducted an extensive optical study of the NGC 3226/7 pair. They used single slit spectroscopy to study the kinematics of the excited gas in the system, finding evidence for gas outflow from the nucleus at a velocity similar to that of the anomalous velocity HI cloud in our observations. They also detected an 'arm', stretching from NGC 3227 to its companion, with a mean velocity of 500 km s^{-1} . Single dish, neutral hydrogen observations (Heckman, Balick & Sullivan, 1978. (*Astrophys.J.*, **224**, 745) seemed to substantiate the presence of the arm when a weak emission wing, extending down to 500 km s^{-1} , was seen in the profile taken $3'N$ of the nucleus. Our observations, however, show no evidence for neutral gas emission at these velocities.

Extended ionised gas emission has recently been observed on the INT and its dynamics and structure are currently being compared with the HI observations.