HI OBSERVATIONS OF THE INTERACTING GALAXIES - VV 371 AND VV 329

Edwin J. Grayzeck,
University of Nevada Las Vegas

1. INTRODUCTION

Recent evidence for the tidal interaction among neighboring galaxies in the form of HI bridges and streamers has been accumulated by Haynes(1981). The successful application of computer simulations to model these encounters has largely been restricted to the nearby systems such as the Milky Way. In this paper, I will report on preliminary observations of the HI distributions associated with two interacting systems - VV 371 and VV 329.

2. OBSERVATIONS

Initially, those galaxies classed by Vorontsov-Velyaminov(1977) as "Dwarf Satellites on a Stem" were selected for observations at the Arecibo Observatory using its 21 cm, dual circular feed, to search for HI emission. From the sample of 20 objects, 6 were selected for subsequent observations employing the flat feed which has a HPBW of 3.9; for detailed characteristics of this receiver system see Hewitt, et al. (1982). For the two galaxies in this report, the 1008 channel autocorrelator was used to provide a velocity resolution of 8 km/s (VV 371) or 4 km/s (VV 329). Grid positions were chosen around these two galaxies to sample the environs of both the parent and nearby companion objects. A typical observation consisted of a 5 minute total power integration both on the galaxy and at a position to the east providing the same zenith angle coverage; the resulting RMS is 4.5 MJy. From this collection of profiles, a partially sampled map has been accumulated and preliminary contour corresponding to column densities exceeding 10^{19} cm^{-2} have been constructed for both galaxies as shown in Figure 1a and 1b.

3. DISCUSSION

VV 371

The contour map in Figure 1a indicates that the HI peak associated with this galaxy shows a distortion to the east, with a secondary rise approximately 12' from the main galaxy. A sampling of positions near

E. Athanassoula (ed.), Internal Kinematics and Dynamics of Galaxies, 97–98.

this enhancement shows that the peak is centered on a faint galaxy(VV371c).

VV 329A(NGC7679) and VV 329B(NGC 7682)

The HI emission in Figure 1b is strongest towards VV 329B, but extends to the west to include both objects in a common envelope. The former object, which is also a radio source (Mirabel 1982), shows a distorted two lobed profile that exhibits only a single feature at VV 329A.

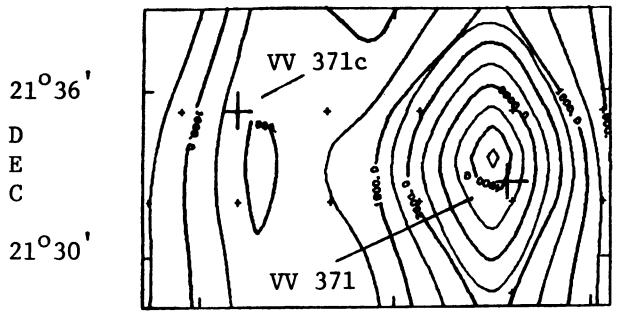

Figure 1a. The HI column densities ($10^{16}cm^{-2}$) toward VV 371. Small crosses are grid points.

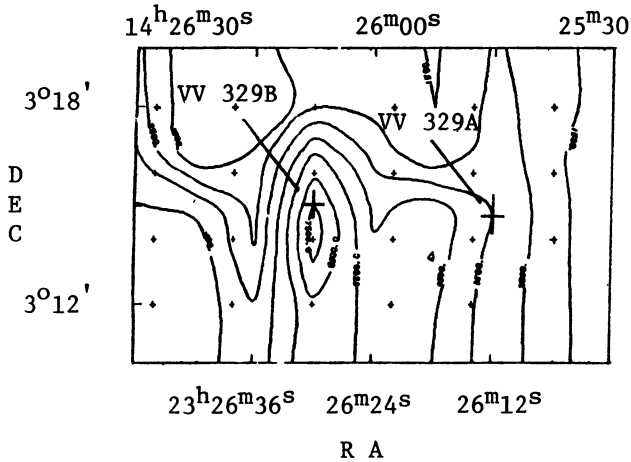

Figure 1b. The HI column densities ($10^{16}cm^{-2}$) toward VV 329. Small crosses are grid points.

The following HI properties have been found for the above galaxies:

Table I

Galaxy	Type	V_H(21cm)	$\Delta V(0.2)$	$\int$ S dV	Dist	Mass(HI)
VV371	SBb	1146 km/s	130 km/s	4.96 Jy-km/s	21 Mpc	0.50×10^9 M_o
VV371c		1130	80	2.19		0.21
VV329A	SB0	5080	150	2.76	92	5.5
VV329B	SBa	5120	240	4.22		8.4

4. REFERENCES

Haynes, M. 1981, Astron. J., 86, 1126.
Hewitt, J., Haynes, M., and Giovanelli, R. 1982, preprint.
Mirabel, F. 1982, preprint.
Vorontsov-Velyaminov, B.A. 1977, Astron. Astrophys. Suppl., 28, 1.

https://doi.org/10.1017/S0074180900032514 Published online by Cambridge University Press