

## HI 21-CM AND OH 18-CM ABSORPTION LINES IN IRAS GALAXIES

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The 18-cm and 21-cm surveys of luminous infrared galaxies achieved with the Nançay radiotelescope led to the detection of OH and/or HI absorption lines in 7 bright IRAS galaxies. We show that a careful comparison of optical radial velocities and 1) HI absorption line radial velocities or 2) HI emission line radial velocities gives valuable indication on the radial motions of the circum-nuclear gas in our sample of galaxies and in the IRAS galaxies studied by Mirabel and Sander (1988).

Most HI absorption lines show a net redshift when compared with optical radial velocities. The histogram of these velocity differences is presented on fig. 1, including our data and the data published by Mirabel and Sanders (1988). The main cause of error in the data comes from the optical redshift measurements (up to  $\pm 150 \text{ km s}^{-1}$ ). A "sign test" has been performed and confirms that the average radial velocity difference is significant (with a 5% error risk). The radio radial velocities, determined from the HI emission lines of 90 IRAS galaxies (Martin et al. 1990) have been compared with optical redshifts obtained from the literature or from our own optical measurements (Dennefeld et al. 1990, and this conference). It is shown that for these galaxies, the mean difference between optical and radio radial velocities is smaller than  $10 \text{ km s}^{-1}$ . The same conclusion has been reached after analysing the samples of IRAS galaxies observed in emission by Mirabel and Sanders (1988). We assume therefore that the optical redshift is also a good estimator of the systemic velocity in the sample of galaxies observed in absorption at 21 cm.

The absence of velocity shift between radio and optical data for the samples of IRAS galaxies with HI emission and the velocity difference of about  $80 \text{ km s}^{-1}$  between the HI absorption line velocities and optical radial velocities favours the idea that the gas observed in absorption is falling onto the nuclei of these galaxies.

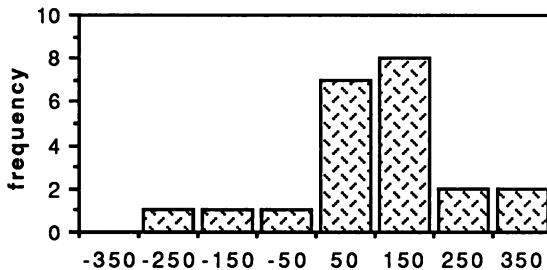


Fig 1:  $V(\text{HI})_{\text{abs}} - V_{\text{opt}}$  (km/s)

### References:

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Mirabel, I.F., Sanders, D.B., 1988, *Astrophys. J.* **252**, 147