

# HI DISTRIBUTION IN EXTREME DWARF IRREGULARS AND DWARF SPHEROIDALS

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## 1. Introduction

Recent studies (Puche & Westpfahl 1994, Young & Lo 1996) have shown that the distribution of HI in some extreme low luminosity dwarf irregular galaxies (e.g. M81dWA, Holmberg I, Leo A) tends to have a ring-like (or shell-like) distribution which suggests that a single burst of star formation could expell most of the remaining ISM (or at least a large fraction of it) from the system. In view of this, Puche & Westpfahl (1994) suggested that in dwarf spheroidal galaxies, the HI should be found at large radii since no young stellar population is observed in most of them.

## 2. HI in Dwarf Spheroidals

Recently, HI was observed close to the dwarf spheroidals Phoenix (Carignan, Demers & Côté 1991) and Tucana (Oosterloo, Da Costa and Staveley-Smith 1996). While the situation for Phoenix is ambiguous due to the proximity along the line-of-sight of the Magellanic Stream, the large HI mass derived ( $\sim 10^6 M_{\odot}$ ) for Tucana suggests that this gas is more likely to be a foreground Galactic cloud.

In Sculptor, some quantity of HI ( $\sim 5 \times 10^3 M_{\odot}$ ) was first detected at the same systemic velocity than the optical ( $\sim 110 \text{ km s}^{-1}$ ), using single dish Parkes (HPBW  $\simeq 15'$ ) observations. However, much more HI gas was uncovered after mapping the dSph with the Australia Telescope Compact Array. Both global profiles are shown in Fig. 1. From the synthesis observations, a total HI mass of  $\simeq 2 \times 10^4 M_{\odot}$  is derived, for an  $M_{\text{HI}}/L_B = 0.02$ . As can be seen in Fig. 2, most of the HI is mainly in two clouds having a ring-like structure and lies outside the optical, as predicted by Puche & Westpfahl (1994).

The morphology of the HI distribution and the fact that the gas is located further out in dSph's than in the low-mass dI's suggests that there may exists an evolutionary link between those two types of dwarfs.

## References

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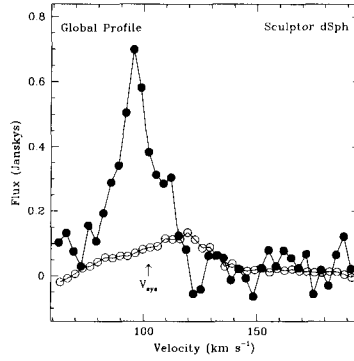


Figure 1. HI profiles of Sculptor from the Parkes (o) and the ATCA (•) observations.

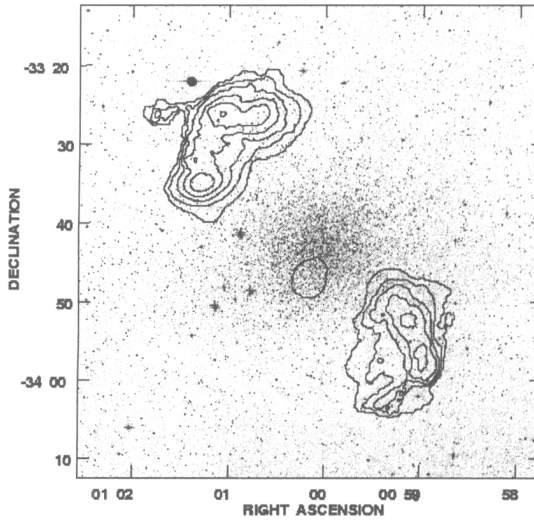


Figure 2. Sculptor HI surface density distribution superposed on an optical image.