

DETECTION OF CO (J=1-0) IN THE DWARF ELLIPTICAL GALAXY NGC 185

Tommy Wiklind and Gustaf Rydbeck

Onsala Space Observatory

S-439 00 Onsala, Sweden

We report the first detection of CO(J=1-0) emission in the dwarf elliptical galaxy NGC 185. The observations were performed with the Onsala 20 m telescope equipped with a SSB tuned Schottky mixer and, for the most recent observations, a SIS mixer. The previously reported tentative detection of CO in NGC 185 by Johnson and Gottesman (1979) does not agree with our results, see also Knapp (1983).

NGC 185 is a companion to M31 and classified as dE3p (Sandage and Tammann, 1981). It is classified as peculiar owing to the presence of dust patches and a population of blue stars situated in the centre region (Hodge, 1963). It contains $1.5 \cdot 10^5 M_{\odot}$ of atomic hydrogen, which is asymmetrically distributed with respect to the centre (Johnson and Gottesman, 1983).

The presence of both dust and atomic hydrogen made NGC 185 a prime object for a deep search for molecular gas. We detected CO emission at a level of 37 mK; intensities are given as main beam brightness temperature, $T_{\text{mb}} = T_{\text{A}}^* / \eta_{\text{mb}}$ ($\eta_{\text{mb}} \approx 0.3$). So far we have observed two positions; the center and a prominent dust cloud. Emission was detected from both places. The emission profile consists of two distinct peaks, centered at $V_{\text{LSR}} = -203 \text{ km s}^{-1}$ and $V_{\text{LSR}} = -292 \text{ km s}^{-1}$, respectively.

The HI seen by Johnson and Gottesman was centered at $V_{\text{LSR}} \approx -190 \text{ km s}^{-1}$, their observations did not cover a possible HI component around -290 km s^{-1} . With only two observed positions it is impossible to determine whether the two peaks correspond to an ordered motion or not.

Conservative estimates of the mass of molecular gas can be made by assuming Galactic factors for the conversion of CO intensity to H_2 mass. In the case of optically thick emission we get approximately $1.5 \cdot 10^5 M_{\odot}$ of H_2 within the observed region. Should the emission be optically thin we get $5 \cdot 10^3 M_{\odot}$. We emphasize that these mass estimates are very uncertain, but most probably represents lower limits for both cases.

REFERENCES

- Hodge, P.W.: 1963, *Astron. J.*, 68, 691.
 Johnson, D.W. and Gottesman, S.T.: 1979, in *Photometry, Kinematics and Dynamics of Galaxies*, ed. D.S. Evans (Austin, Univ. of Texas Press).
 Johnson, D.W. and Gottesman, S.T.: 1983, *Astrophys. J.*, 275, 549.
 Knapp, G.R.: 1983, in *Internal Kinematics and Dynamics of Galaxies*, IAU Symp. No. 100, ed. E. Athanassoula.
 Sandage, A.R. and Tammann, G.A.: 1981, *A Revised Shapley-Ames Catalogue of Galaxies*, Carnegie Institution of Washington, Washington, D.C.

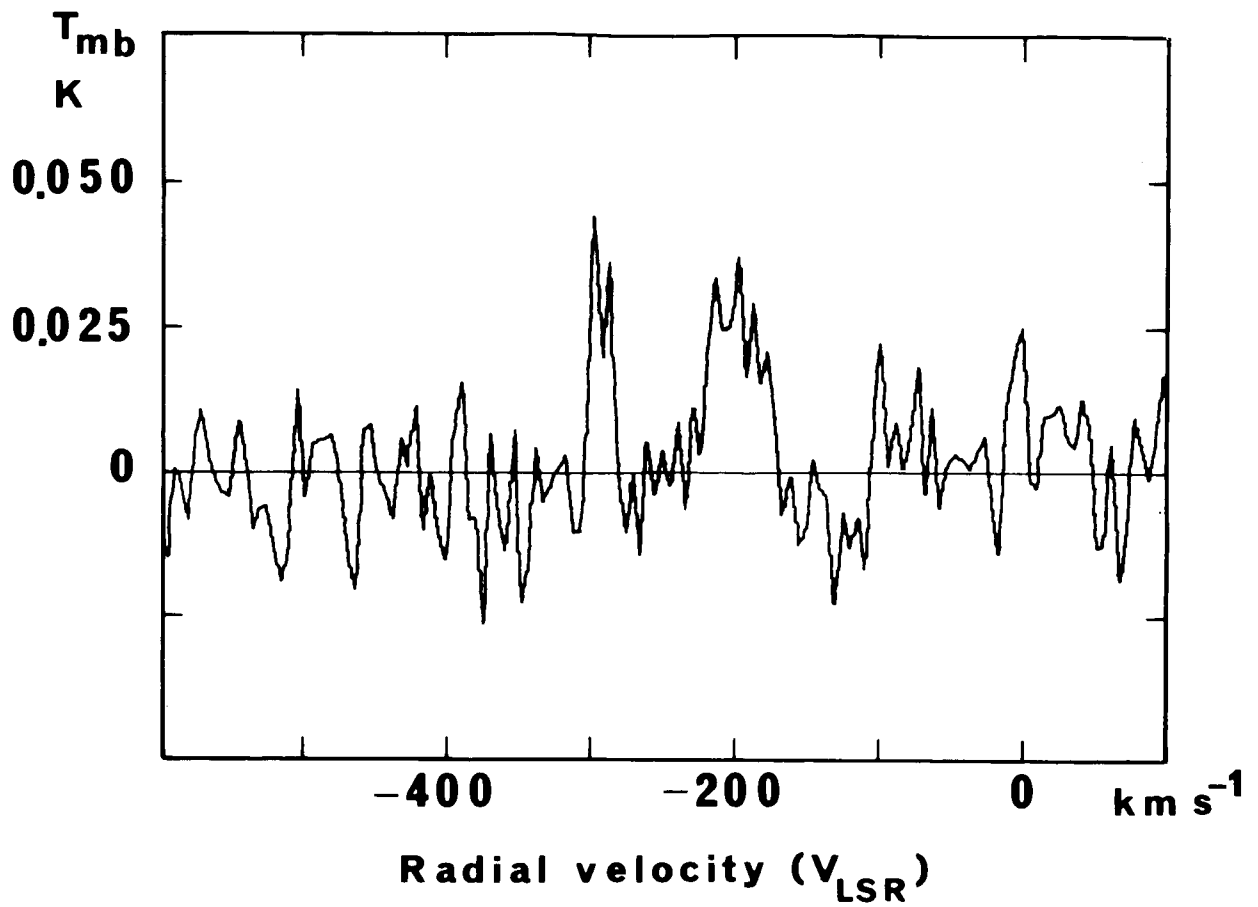


Figure CO(J=1-0) spectra of NGC 185. The velocity resolution is 5.2 km s^{-1} and the intensity is given as main beam brightness temperature, $T_{\text{mb}} = T_{\text{A}}^* / \eta_{\text{mb}}$. No baseline correction has been applied.