25. A PECULIAR NEUTRAL HYDROGEN CONCENTRATION AT $l^{II}=280°$, $b^{II}=-18°$

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The observations discussed in this paper were obtained with the 30-m telescope of the Instituto Argentino de Radioastronomía.

The feature described here was found during a general survey of a region bounded by $220° \leqslant l^{II} \leqslant 300°$, $-30° \leqslant b^{II} \leqslant -15°$ which will be published later. At $l^{II}=280°$, $b^{II}=-18°$ an emission appeared with a peak temperature of about 20 K, half width of 6 km s^{-1} and $V_R=-30$ km s^{-1}.

This feature was rather unusual, so we began the observation of the surroundings of that point to the limits defined by the possibility of detection of the signals. A total of 200 points were observed distributed according to Figure 1, which represents approximately the extension of the concentration.

Every profile has been studied by fitting gaussian curves after subtracting local

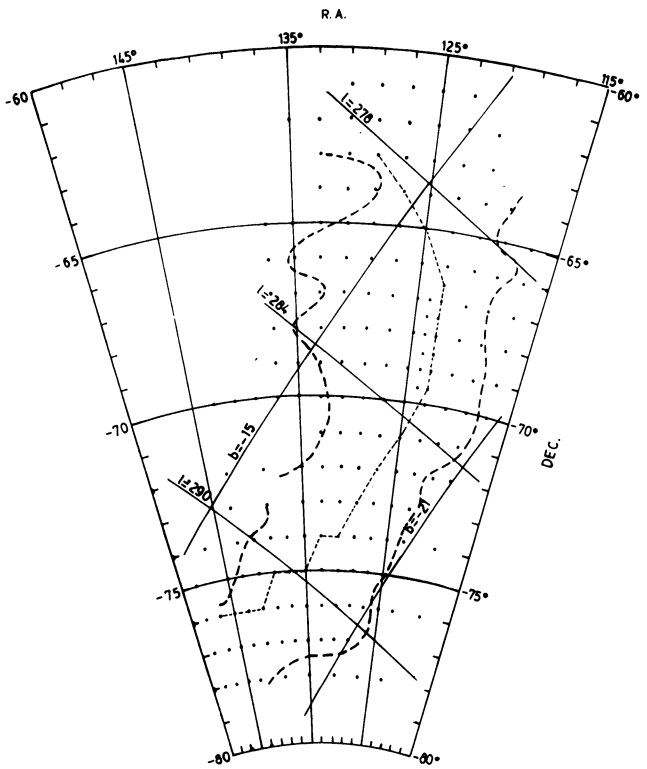

Fig. 1. Grid of observed points. Heavy dashed line indicates the limits of the clouds. Light dashed line shows the maximum peak antenna temperature.

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hydrogen contributions. In this way we obtained the peak temperature, dispersions and velocities which could give us some idea of the different physical parameters of the cloud. In many cases several peaks were seen simultaneously with velocities distributed between -10 and -50 km s^{-1}.

The strongest feature appears at V between -26 and -42 km s^{-1} and shows an elongated shape along $\alpha = 123°$ from $\delta = -66°$ to $\delta = -70°$ where the axis of the concentration turns and becomes parallel to the galactic plane.

The general appearance of the cloud resembles the one described by Verschuur (1969) and Wesselius (1969).

This cloud, located at $l^{II} = 103°$, $b^{II} = +69°$, presents also a turning point, but the direction of the arm parallel to the galactic plane, is in the opposite sense.

In the regions of the cloud where the intensities are strongest, there is a relative absence of local hydrogen. A similar characteristic has been pointed out by Cugnon (1968) for another feature at $l^{II} = 349°$, $b^{II} = +3°$.

The dimensions and mass of the cloud depend on the assumed distance. Table I shows, for several assumed distances: the distance to the galactic plane z, the distance to the galactic center R, dimensions $L_1 \times L_2$ and mass M. The mass has been obtained from N_H contour maps for velocities ranging from -19 to -50 km s^{-1}.

TABLE I

Data for the observed cloud

r (kpc)	z (kpc)	R (kpc)	$L_1 \times L_2$ (kpc × kpc)	M ($M_\odot$)
0.1	0.03	10	0.009 × 0.026	2.6×10^2
1	0.3	9.8	0.087 × 0.262	2.6×10^4
10	3.1	12.4	0.87 × 2.62	2.6×10^6
50	15.4	49	4.35 × 13.1	6.5×10^7
100	30.9	93.7	8.7 × 26.2	2.6×10^8

The analysis of the velocity distribution along the cloud's axis reveals a continuous variation from -20 to -40 km s^{-1}.

Two interpretations are possible for this feature. If the velocity variation is due to the effect of the line of sight angle with respect to the true center mass velocity, that angle would be 70° and the absolute value of the velocity 90 km s^{-1} pointing to increasing declinations and approaching us.

Another possible interpretation is that the cloud is rotating. The implications of this hypothesis will not be considered here because they depend strongly on the assumed distance. No peculiar optical feature was found which could be associated with this cloud. No special absorption has been seen in the area and there are no stars available with measured interstellar lines. Thus, any distance assumed is merely hypothetical. More objects of this kind are being looked for.

A more detailed study of this concentration will be published elsewhere.

References

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