

# OBSERVATIONS OF HIGH-VELOCITY CLOUDS COLLIDING IN THE ANTICENTER

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High-velocity clouds that are colliding with Milky-Way material in the anticenter were observed in the 21-cm line of neutral hydrogen, using the Arecibo telescope with a system temperature of 40 K. We confirm the reported (Mirabel, 1982) positional and kinetic correlations between a high-velocity cloud that is infalling with a velocity of  $-200 \text{ km s}^{-1}$  and a strong disturbance in the interstellar medium (see figure 1).

A region in the anticenter with large anomalous motions in the interstellar gas known as "Weaver's jet" (Weaver, 1974) was also observed. The events in this region show a striking resemblance with the phenomena observed in the region of the colliding cloud AC I. The observations suggest that strong disturbances in the permitted-velocity gas that take place in the anticenter are the result of the impingement on the galactic disk of neutral-hydrogen high-velocity clouds (Burton and Moore, 1979).

We estimate that the infall of a single cloud with a mass of  $10^4$  to  $10^5$  solar masses deposits an energy of  $5 \times 10^{51}$  to  $5 \times 10^{52}$  ergs on a relatively small region of the Milky Way. This energy is several times the energy involved in the blast wave from a typical supernova. It is suggested that the on-going accretion of HI clouds must be an important source of energetic events in the interstellar medium, and may trigger large-scale structural peculiarities inside and outside the galactic disk.

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## REFERENCES

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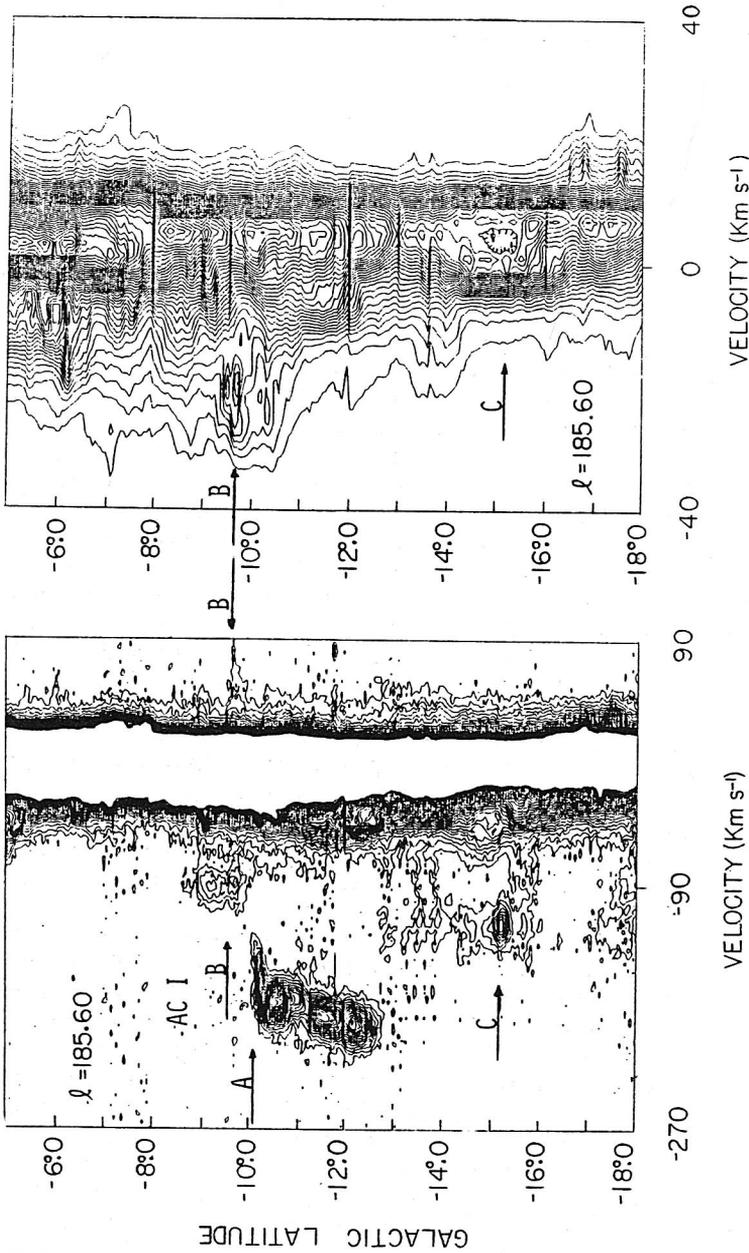


Figure 1. HI contour diagrams in the region of the infalling cloud with a velocity of  $-200 \text{ km s}^{-1}$  that is colliding with Milky-Way material in the anticenter. Arrow A in the left panel points to a steep edge and abrupt deceleration of the high-velocity cloud AC I. In the left panel, at adjacent positions toward the galactic plane, there is gas that is being accelerated to velocities of  $-90$  and  $+80 \text{ km s}^{-1}$  (arrows B). These features are at the same position as the perturbation at  $V=20 \text{ km s}^{-1}$  and the relative decrease of gas density at  $V=+8 \text{ km s}^{-1}$  indicated by arrow B in the right panel. The high-velocity cloud with  $V=-120 \text{ km s}^{-1}$  pointed by arrow C in the left panel is at the same position as the "hole" at  $V=+8 \text{ km s}^{-1}$  pointed by arrow C in the right panel.