HIGH-VELOCITY H I PROBABLY ASSOCIATED WITH THE BIPOLAR OUTFLOW IN L1551

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We present preliminary Arecibo results from a search for high-velocity neutral hydrogen associated with the molecular outflows in regions of star formation. In L1551 we detect HI with velocities of up to +80 km s^{-1} that may be associated with the redshifted CO lobe of the bipolar outflow. It is not possible to reach conclusions about the expected blueshifted H I counterpart since there is severe contamination from high-velocity H I clouds at negative velocities. For the redshifted H I we estimate a column density of 1×10^{19} cm^{-2} and a mass of ~0.04 $M_\odot$ in the velocity range of 20 to 80 km s^{-1}.

We discuss the limitations for the detection of H I associated with molecular outflows that arise from confusion with foreground and background gas along the line of sight.

THE BIPOLAR FLOW ASSOCIATED WITH THE PECULIAR PRE-MAIN-SEQUENCE OBJECT PV CEPHEI

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CO observations reveal a bipolar flow associated with the peculiar pre-main-sequence object PV Cephei. The axis of this flow is roughly aligned with the symmetry axis of GM 29, the cometary nebula associated with PV Cephei. The total mass in high velocity gas is 0.8-2.6 $M_\odot$; its expansion age is $(0.5\text{-}1.5)\times10^5$ years. If driven by a 300 km s^{-1} stellar wind, a mass loss rate of $(0.5\text{-}3.0)\times10^{-6}$ $M_\odot$ yr^{-1} is required to drive this flow. The optical morphology of GM 29 provides strict constraints on the size of any collimating disk in the PV Cephei system. Implications of these observations for models of cometary nebulae and bipolar flows are discussed.