[IM05] Far Ultraviolet Observations of the Loop I/North Polar Spure Region

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We present the results of diffuse far-ultraviolet (FUV) observations for the Loop I/North Polar Spur (NPS) region. We have detected several important ionic emissionlines such as C IV, Si II, He II, and Al II. The spectral image made at C IV 11550 A shows a shell-like feature at the outer edge of the X-ray NPS, just inside the Loop I radio ridges. Another interesting C IV feature is seen at the inner edge of the "interaction ring" in contact with the X-ray bright hot gas. On the other hand, Si II image shows an intense emission in the region where dust is thick. A fluorescent emission from hydrogen molecule is also seen in this region.

[IM06] Probing Inward Motions in Starless Cores Using The HCN *J=1-0* Hyperfine Transitions: A Pointing Survey Toward Central Regions

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We have carried out a survey toward the central regions of 85 starless cores in HCN *J=1-0* to study inward motions in the cores. Sixty-four cores were detected. The infall asymmetry in the HCN spectra is found to be more prevalent, and more prominent than in any other previously used infall tracers such as CS *J=2-1*, DCO^+ *J=2-1*, and N_2H^+ *J=1-0*. We found close relation between the intensities of the HCN and N_2H^+ lines. This implies that the HCN is not much depleted in the central regions of the cores. The δV distribution of each HCN hyperfine line for all sources is similar. Moreover the δV values obtained from different HCN hyperfine lines for each source are nearly similar. These may mean that most of starless cores are in similar kinematic states across the layers of the cores. We identify 16 infall candidates using all available indicators such as the velocity shift δV and the blue to red peak intensity ratio double peaked profiles for HCN *J=1-0*, CS *J=2-1*, *J=3-2*, DCO^+ *J=2-1*, and N_2H^+ *J=1-0*. Four of them, L63, L492, L694-2, and L1197 are found to show higher blue to red ratio in the HCN hyperfine line along the lower opacity, suggesting that infall speed becomes higher toward the center.