Q41a Molecular Clouds and HI in the Carina Flare Supershell

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The Carina Flare is a rare example of a supershell with associated molecular matter in which triggered star formation appears to be occurring (Fukui et al. 1999). The molecular component of the shell is seen as an extensive cloud complex centred at around $l \sim 288°$, $b \sim 3°$, with dimensions of $\sim 300 \times 400$pc, and reaching $z \sim 450$pc at its highest point. The presence of molecular gas at such high latitudes marks this shell as extremely unusual, and it is still the only one of its kind known. The total molecular mass is estimated at $\sim 10^5 M_\odot$ with one particularly striking GMC of $\sim 10^4 M_\odot$ located at $b = 8°$ ($z \sim 350$pc). Observations with the SEST telescope have revealed a molecular outflow and dense $C^{18}O$ core towards a ^{13}CO clump containing a luminous IRAS YSO candidate ($L \sim 8000 L_\odot$), indicating that massive star formation is occurring in the shell (Fukui et al. in preparation).

We present the physical and observational properties of the ^{12}CO and ^{13}CO clouds, based on a newly completed catalogue of the region. Around 180 ^{12}CO and 50 ^{13}CO clouds are catalogued, with molecular masses ranging from the detection limit of $\sim 30 M_\odot$ to $\sim 1.2 \times 10^4 M_\odot$, and linewidths ranging from ~ 1km s^{-1} to ~ 6km s^{-1}. We also present new data from the Parkes 21cm Southern Galactic Plane Survey. The HI structure of the shell is revealed with unprecedented clarity and the HI and CO distributions show a good correspondence in both position and velocity. Structural features such as CO gas distributed along the inner walls of the HI shell; and swept-back HI tails with dense molecular heads are seen for the first time.