SHOCKED MOLECULAR HYDROGEN FROM STAR FORMING REGIONS

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Near infrared (2 micron) emission lines from molecular hydrogen provide a powerful probe of the morphology and energetics of outflows associated with stellar birth. The H_2 emission regions trace the location of shock waves formed when the high velocity outflow from young stars encounters dense quiescent gas. Since H_2 is the dominant coolant of the hot post-shock molecular gas, the H_2 lines provide a measure of the fraction of the total mechanical luminosity radiated away from the cloud.

We report results obtained with the KPNO 2.1 m telescope as part of an on-going program of low spectral resolution, high sensitivity observations of H_2 lines from star forming regions. We have completed extensive mapping of the v = 1-0 S(1) line at 2.12 microns toward NGC 2071, NGC 1333 (HH-12), Cepheus A, and HH-2 with angular resolution 10-20 arcseconds. We discuss the structure and physical conditions of the emission regions.

NEAR-IR OBSERVATIONS OF THE SHARPLESS REGIONS S269, S271, S307 AND S311

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Using an InSb photometer/spectrophotometer attached to the 1-m ESO telescope (La Silla, Chile), we searched for the near-infrared emission from the Sharpless regions S269, S271, S307, and S311. These regions appear on the Palomar Sky Survey red plates, as bright visible nebulae, and have extended radio continuum emission.

The detected near-infrared sources are coincident in position with the 6-cm radio continuum peaks and with IRAS sources. Combining our J, H,K,L, photometry with IRAS flux densities, we have derived the bolometric luminosities of the sources.

The IR source in S269 has a luminosity between 1-100 μm of 1500 $L_\odot$, consistent with a B2-3 (ZAMS) star that could be the ionizing source of the H II region. An extended 2.2 μm emission with a near-IR flat

https://doi.org/10.1017/S0074180900095371 Published online by Cambridge University Press