treme T Tauri star AS353A.

Such high resolution mapping of molecular hydrogen permits a detailed comparison with the optical emission. This represents an important step in understanding the interactions of mass outflows, molecular clouds and HH-objects.

DISCUSSION

Cohen: Are you planning to observe the vicinity of L1551-IRS5 in detail in molecular hydrogen?

Zealey: Our plans for 1983 are to observe the L1551 region. The region is large, therefore we will confine the observations, initially to near the HH-objects. We are also going to observe southern HH/bipolar complexes using the AAT this spring. These sources will include the intriguing HH 46/47 complex.

Snell: Did you map the molecular hydrogen emission in the AS353A region?

Zealey: Yes. We detected the H_2 emission in the 1-0 S(1) 2.12μm line, coincident with HH 32A. The surface brightness is 2.6×10^{-5} erg cm^{-2} s^{-1} sr^{-1}. We only observed this single position in the AS353A region.

THE ULTRAVIOLET SPECTRUM OF HERBIG-HARO OBJECT 2H

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We present *IUE* spectra of Herbig-Haro object 2H which show a strong "excess" *UV* continuum and prominent emission lines of C, N, O, Si, Mg, and possibly Al. The continuum, F_λ, exhibits a turnover shortward of about 1450 Å, confirming for the first time the H° 2-photon nature for the emission source. We also note a possible absorption feature near 1680 Å, which could result from a new grain or molecular constituent in these protostellar objects.

Our recently computed models of steady shocks into partially-ionized gas reproduce the 2-photon spectral shape, but its intensity relative to Hβ and the Balmer continuum is anomalously high. We suggest that a range of shock velocities, 70 to 100 km s^{-1}, or non-steay, "truncated" shocks may be responsible.

1. Guest Investigator with NASA's International Ultraviolet Explorer (*IUE*) telescope.

DISCUSSION

Kuhi: All your conclusions depend on fitting the theoretical two-photon emission to the observed peak in the ultraviolet which looks to me like the blend of several emission lines. How can you rule out this possibility?

Brugel: This is definitely a problem and we cannot completely rule out the possible effects of weak unresolved emission lines. However, the shape of the observed continuum is distinctly characteristic of 2-photon emission!

Böhm: If the extinction is really as small as you indicated, would you not get line ratios in the *optical range* which are hard to understand using shock wave models?

Brugel: I believe that the average galactic extinction law with E(*B*-*V*) = 0.34 is applicable in the optical and the reddening correction is being applied correctly in this wavelength region. However, in the *UV* the extinction curve is probably much smaller than even the θ^2 Orionis curve. Thus only the *UV* line strengths need to be adjusted.

Liseau: Three distinct discontinuities were discernible in the observed continuous spectrum of HH 2 (λ ∿ 1500, 1700, 2500 Å). Have you examined the possible continuum contributions from Si I and Mg I (λ ∿ 1525, 1680, 2517 Å)?

Brugel: Only the discontinuity at ∿ 1680 Å appears on all 4 images and is probably real. We did consider Mg I continuum and found it to be too weak; we did not consider Si I.

Münch: If the extinction in the object were internal taking into account effects of scattering with high albedo in the visual, it can be shown that the external extinction of the object is nearly zero.

Brugel: Our results also imply very little external extinction.