Multiwavelength Analysis of the Cepheus E Embedded Outflow

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Abstract

The physical and kinematical characteristics of Cepheus E (Cep E) 'embedded' outflow are analyzed using CVF ISOCAM data, in conjunction with imaging and spectroscopic data obtained recently in the near-infrared (NIR) and optical wavelengths.

We find that the south lobe of Cep E is detectable at optical wavelengths, and therefore Cep E provides an excellent example to study the relationship between optical and embedded outflows. Preliminary results indicate that the fluxes for the v=0-0 S(5) and S(3) molecular hydrogen (H_2) lines at 6.91 and 9.67 μm, respectively, do not follow standard molecular shock models, while the fluxes of the NIR H_2 lines at 2 μm do. From the optical spectra we conclude that the south lobe has a radial velocity of -70 ± 10 km s^{-1} and a gas density of 3300 cm^{-3} (derived from the ratio of the [S II] λ6731 to λ6717 lines). We compare these results with the latest published 2D-3D simulations of molecular outflows.