

## NEAR- AND MID-INFRARED IMAGING OF THE PN IC 418

J. L. HORA

*Institute for Astronomy, 2680 Woodlawn Dr., Honolulu, HI 96822, USA*

L. K. DEUTSCH

*NASA/Ames Research Center, M/S 245-6, Moffett Field, CA 94035, USA*

W. F. HOFFMANN

*Steward Observatory, University of Arizona, Tucson, AZ 85721, USA*

G. G. FAZIO

*Smithsonian Astrophys. Obs., 60 Garden Street, Cambridge, MA 02138, USA*

and

K. SHIVANANDAN

*Center for Advanced Space Sensing, NRL, Washington, DC 20375, USA*

**Abstract.** We present high-resolution near- and mid-infrared images of the planetary nebula IC 418 at 1.2 (*J*), 1.6 (*H*), 2.2 (*K*), 9.8, and 11.7  $\mu\text{m}$ . The near-IR images were obtained with a 64x64 pixel Hg:Cd:Te array camera, and the mid-IR images were obtained using the new 20x64 pixel Mid-Infrared Array Camera (MIRAC). The size of IC 418 in the near-IR is seen to vary with wavelength, being largest at *K* and smallest at *J*. Differences in the morphology of the nebula are seen between the *J* and *K* images. There is excess near-IR emission in the center of the nebula, after subtracting out the emission from the central star. Faint halo emission is detected at *H* and *K*, extending to a total diameter of approximately 40". The 9.8  $\mu\text{m}$  emission is distributed nonsymmetrically, with the peak in the NE lobe.

The images of IC 418 at 2.2 and 9.8  $\mu\text{m}$  are shown in Figure 1. Images of the nebula at the other wavelengths are presented elsewhere (Hora 1991). The brightest nebular emission in both images is in the NE lobe, at roughly the same position angle. However, there is no 9.8  $\mu\text{m}$  SW emission lobe, and no emission peak from the region near the central star. The FWHM size of the 2.2  $\mu\text{m}$  image is  $\sim 1''$  larger than the 9.8  $\mu\text{m}$  image. No emission from the halo region is detected at 9.8  $\mu\text{m}$ .

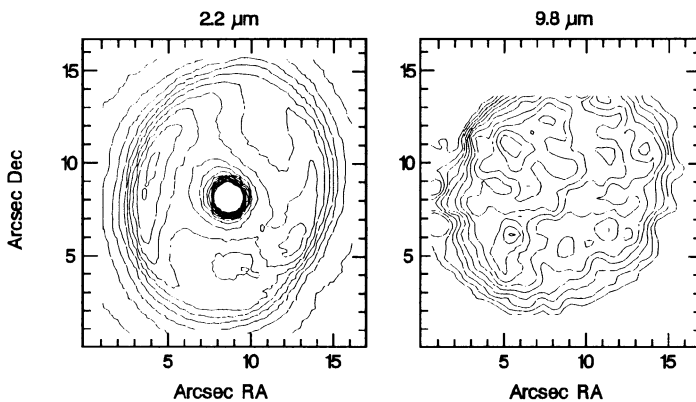


Figure 1. Contour images of IC 418 at 2.2 and 9.8  $\mu\text{m}$ .

## References

Hora, J. L. 1991, Ph. D. Dissertation, University of Arizona