

## SPATIAL DECONVOLUTION OF IRAS OBSERVATIONS OF PLANETARIES

George Hawkins and B. Zuckerman  
University of California, Los Angeles

**ABSTRACT.** The sizes of fifty planetaries at the four IRAS wavelengths are presented as a result of performing spatial deconvolution of survey mode data. We obtain an increase in resolving of a factor of about 2 or 3 from the normal IRAS detector sizes of 45", 45", 90", and 180" at wavelengths 12, 25, 60 and 100 microns. Most of the planetaries deconvolve at 12 and 25 microns to sizes equal to or smaller than the optical size. Some of the nebulae such as NGC 6720 and NGC 6543 show full width at half maximum at all IRAS wavelengths that are about equal to the optical size, while others give an increasing size with wavelength. The profiles of a few interesting cases are shown. The method and results should allow comparison with models for infrared emission from dust from planetary nebulae.

The one dimensional deconvolution are performed with the Richardson-Lucy algorithm. The SCANPI program is used with survey mode data to sum scans across an object from several different detectors in order to increase the sampling to a rate sufficient for deconvolving, beyond the normal survey mode sampling. The details and limitations of the method are discussed, and deconvolutions of point sources are provided for comparison.