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Spitzer/IRAC Observations of the Helix Planetary Nebula

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Abstract

We have mapped the Helix (NGC 7293) planetary nebula (PN) with the IRAC instrument on the Spitzer Space Telescope. The Helix is one of the closest bright PN, and therefore provides an opportunity to resolve the small-scale structure in the nebula. The emission from this PN in the 5.8 and 8.0 micron IRAC bands is dominated by the pure rotational lines of molecular hydrogen, with a smaller contribution from forbidden line emission such as [Ar III] in the ionized region. The IRAC images resolve the "cometary knots" which have been previously studied in this PN. The "tails" of the knots and the streamers extending into the outer regions of the PN are seen in emission in the IRAC bands. The inner surfaces of the knots towards the central star are bright in the 4.5 micron IRAC band, indicating emission from ionized gas and/or different molecular hydrogen excitation in these regions.

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