KINEMATICS OF THE PLANETARY NEBULA Hb 5. A Progress Report.

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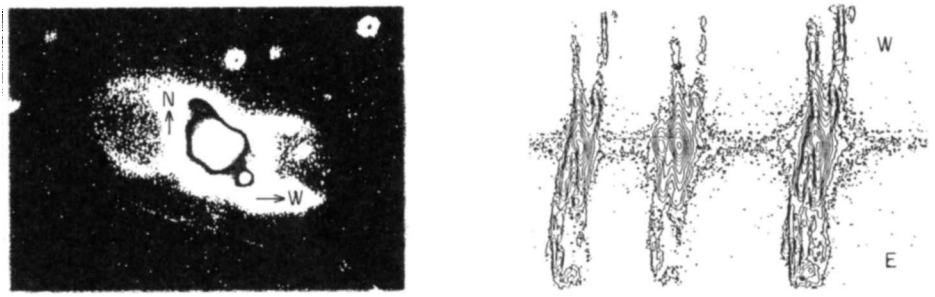
The planetary nebula Hubble 5 shows a very striking bi-symmetry; a 180° rotation around its center would bring the object into fair coincidence. Similar to this nebula is NGC 6537 and, to a lesser degree, NGC 6302. Jet outflows are reported from this "post-main sequence" nebula over a range of 260 km s^{-1} (Phillips and Mampaso, 1988). Otherwise not much has appeared on this object in the literature.

We have taken CCD direct images of Hb 5 in several spectral bands and in the Hα line with the 2.1m reflector of the Observatory at San Pedro Mártir, México. Long slit spectra were obtained in May of 1992 with the IDS spectrograph of the 2.5m Isaac Newton Telescope at the Observatory Roque de los Muchachos, Spain. The 6 slits passing through the center of the object are along position angles 5, 43, 67, 88, 107 and 335 degrees, respectively. The latter direction is the symmetry axis of the nebula.



The left hand figure is an Hα CCD image of Hb 5 while the right hand one is a section of a typical spectrum at PA 67°; it shows Hα flanked by the [NII] lines. A wealth of information is contained in our material. Here we call attention to some properties leaving to a future publication a detailed treatment of our data.

A few relevant results: 1) The spectral lines and their splitting affords evidence for the expanding hollow structure of the lobes. 2) At about 4 arcsec from the center of Hb 5 the bright "wing" of the NE lobe is receding while its SW bright couterpart is approaching the observer. The difference in their projected velocity is roughly 100 km s^{-1}. 3) It appears that the direction defined by the lobes is inclined to the plane of the sky. 4) Based on the markedly unequal intensity of the edges of the lobes and the bi-symmetry of this phenomenon, we may state that such structure is not solely produced by interaction with the ambient matter, as commonly assumed; but most likely the morphology at the source of ejection is responsible for it. The wind causing the outflow is therefore not isotropic; rather it emanates from a bipolar source on the central star. Magnetic phenomena are expected to be at work in such a picture.

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