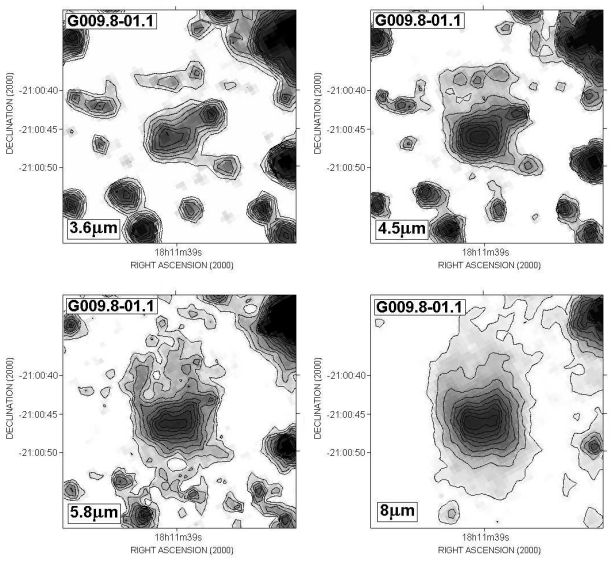

Fig. 21. IRAC band mapping of the MASH I source PN G009.8-01.1 (PHR1811-2100), where the contour parameters [A, B, C] are given by [2.8, 2.35, 0.0995] at 3.6 μm, [3.8, 1.57, 0.0909] at 4.5 μm, [12.9, 11.00, 0.0374] at 5.8 μm, and [39, 34.77, 0.0398] at 8.0 μm. The nebula has a highly elongated appearance at 8.0 μm, and an orthogonal bright interior band. Both of these features are consistent with a bipolar structure.

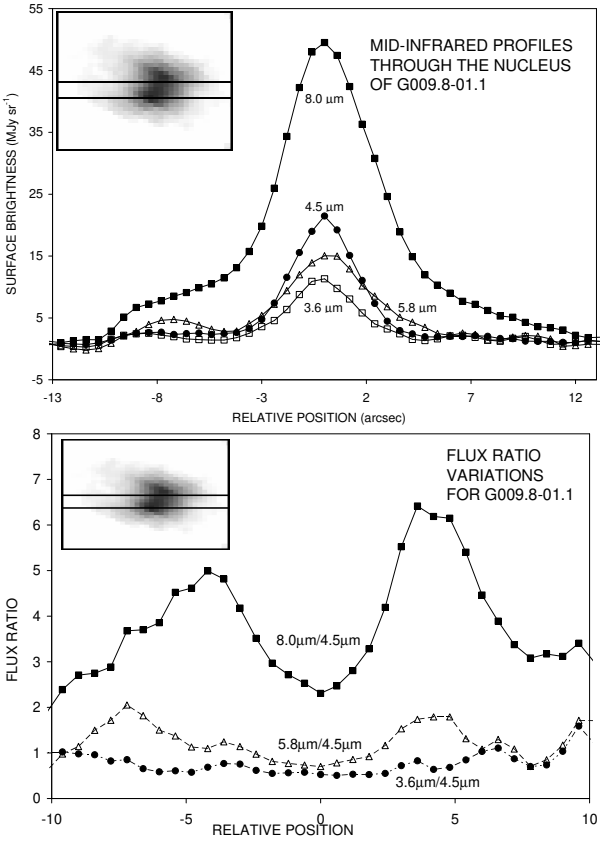

Fig. 22. As for Figure 3, but for the major axis of PN G009.8-01.9 (PHR1811-2100). The centre of the source has a Gaussian emission fall-off, whilst ratios 8.0 μm/4.5 μm and 5.8 μm/4.5 μm have maxima at $\pm$4 arcsec from the nucleus.

et al. 2008). It is also defined as being a "likely" PN, through there is no visual spectrum by which this identification can be assessed.

The dimensions of the 8.0 μm mapping (15.6 $\times$ 11 arcsec^2; see Figure 25) are closely similar to those determined in the visual, and although there appears to be an increase in dimensions between 3.6 and 8.0 μm, it is likely that much of this is due to the low S/N of our results. Profiles along the major and minor axes of the source are illustrated in Figure 26, from which it is clear that there is a bright unresolved nucleus at 3.6–5.8 μm, and a somewhat broader structure at 8.0 μm. The minor axis variation is of particular interest, in that it shows a systematic fall-off with distance from the nucleus. This is untypical of what is observed in most other PNe, where we normally see evidence for well defined central shells, rather than continuous stellar-wind type fall-offs. Such variations have only previously been noted in bipolar flows (see e.g., Phillips & Ramos-Larios 2008a, 2010), where CS winds are important in defining the kinematics. This trend may therefore place the identification of the source in doubt.

3.11. *Other PNe Detected in the GLIMPSE 3D survey*

It is apparent that the haul of extended, higher surface-brightness PNe is rather slim – particularly when compared to what has been observed in previous surveys (e.g., Phillips & Ramos-Larios 2008a; Ramos-Larios & Phillips 2008). This was, in general, broadly to be expected, given that the 3D survey covers regions which are further away from the Galactic plane, and at larger positive and negative latitudes. The spatial density of PNe is very much reduced compared to those observed at lower Galactic latitudes

It is finally worth noting that a good fraction of the PNe detected in this survey were either extremely compact and unresolved, or had a size which was too modest to permit a useful analysis. Four examples of the latter sources are shown in Figures 27 and 28, where we illustrate profiles through the cen-