

## OBSERVATIONS OF THE JET-LIKE STRUCTURE ASSOCIATED WITH THE BINARY PLANETARY NEBULA GLMP 621

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GLMP 621 (IRAS 17395–0841) was first identified as a possible new planetary nebula on the basis of its *IRAS* colors (García-Lario et al. 1997). A few years ago it was confirmed as such through spectroscopic observations where nebular emission lines corresponding to a prototypical low-excitation planetary nebula were detected superimposed on a strong, red continuum corresponding to a star of intermediate spectral type (García-Lario et al. 1997).

The observational study of this planetary nebula was complemented with CCD images taken at various broad and narrow band filters with the 1 m JKT Telescope (La Palma, Spain), and using the 2.5 m NOT Telescope (La Palma, Spain) with the ALFOSC camera together with a set of narrow band filters ( $H\alpha$ , [N II] 6583 Å, [O III] 5007 Å, [S II] 6725 Å, [S II] 6717 Å, and [S II] 6731 Å; see Figure 1). High-dispersion spectroscopic observations were obtained using the echelle spectrograph UES on the 4.2 m WHT Telescope (La Palma, Spain). The slit was oriented at P.A. =  $-4^\circ$  (along the jet-like feature) and at P.A. =  $88^\circ$ . The spectrograph was used in the single-order long-slit mode covering the  $H\alpha$  and [N II] 6548, 6583 Å emission lines.

The narrow band images of Fig. 1 clearly show the presence of a central binary system formed by a central star of the PN and a companion star, and a bright bipolar nebula, with a cross-shaped geometry and an angular extension of  $13'' \times 13''$ . The innermost part of the nebula appears as an ellipse with its major axis subtending  $\sim 6''$ , which is best seen in the [O III] image. A spectacular jet-like structure in the N-S direction, where at least two individual knots can be distinguished, is clearly seen in the light of [N II]. The northern outflow (with an extension of  $5''$ ) is brighter than the southern outflow, suggest-

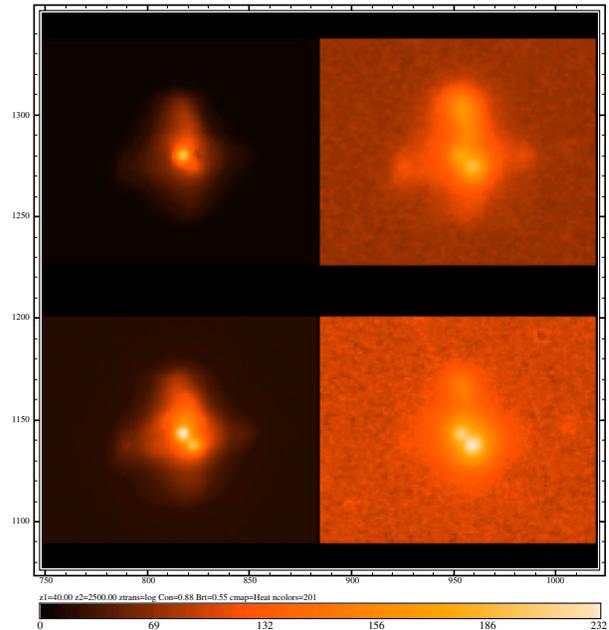


Fig. 1. Narrow band images of GLMP 621. obtained in  $H\alpha$  (top left), [N II] 6583 Å (top right), [O III] 5007 Å (bottom left) and [S II] 6725 Å (bottom right). The intensities are displayed on a logarithmic scale.

ing that the northern jet-like feature is tilted towards us (confirmed by the kinematics). In addition, there are two fuzzy features with an E-W orientation located east and west of the bright nebula at distances of  $\sim 5''$  from the central source (clearly seen in the [N II] and [O III] images).

The long-slit spectrum obtained at P.A. =  $-4^\circ$  shows two main features: (i) the line shape produced by an expanding shell with a line splitting of  $15 \text{ km s}^{-1}$ ; (ii) a low-velocity and low-brightness feature which is barely seen connecting the center of the nebula and the outer edge of the shell with an extension of  $\sim 5''$ . The morphology and the kinematics of the bright shell may be described as an ellipsoidal shell with a homologous expansion (with an expansion velocity of  $\sim 30 \text{ km s}^{-1}$ ). The counterpart of the low-velocity feature and the nature of the observed jet-like structure remain unclear.

### REFERENCES

García-Lario, P., et al. 1997, A&AS, 126, 479

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