RevMexAA (Serie de Conferencias), **15**, 82–82 (2003)

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

A. Riera,[1,2] P. García-Lario,[3] A. Manchado,[4] O. Suárez,[5] A. García-Hernández,[4] and M. A. Guerrero[6]

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 (Hα, [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° (along the jet-like feature) and at P.A. = 88°. The spectrograph was used in the single-order long-slit mode covering the Hα 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 $5''.5$) is brighter than the southern outflow, suggesting 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).

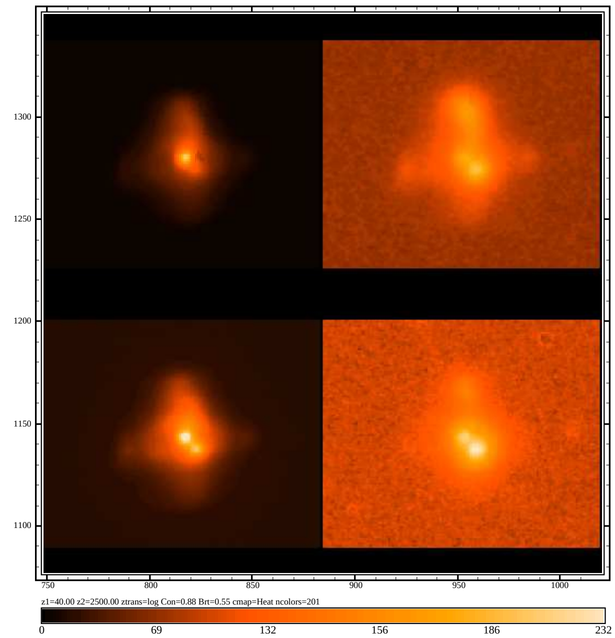

Fig. 1. Narrow band images of GLMP 621. obtained in Hα (top left), [N II] 6583 Å (top right), [O III] 5007 Å (bottom left) and [S II] 6725Å (bottom right). The intensities are displayed on a logarithmic scale.

The long-slit spectrum obtained at P.A. = -4° shows two main features: (i) the line shape produced by an expanding shell with a line splitting of $15\,\mathrm{km\,s^{-1}}$; (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 $\sim 30\,\mathrm{km\,s^{-1}}$). The counterpart of the low-velocity feature and the nature of the observed jet-like structure remain unclear.

[1]Departament de Física i Enginyeria Nuclear, UPC Av. Víctor Balaguer s/n, E-08800 Vilanova i La Geltrú, Spain.
[2]Departament d'Astronomia i Meterologia, Universitat de Barcelona, Av. Diagonal 647, E-0828 Barcelona, Spain.
[3]ISO Data Centre, Villafranca del Castillo, Spain.
[4]Instituto de Astrofísica de Canarias, La Laguna, Spain.
[5]LAEFF-Laboratorio de Astrofísica Espacial y Física Fundamental, Madrid, Spain.
[6]Department of Astronomy, University of Illinois, USA.

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