IRAS 22568+6141: A NEW BIPOLAR NEBULA

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During a survey of IRAS sources with colours similar to those in planetary nebulae, we found that IRAS 22568+6141 is a nebula with an extension of 9" and bipolar structure. Via optical spectroscopy, we worked out a high extinction of $E_{B-V} = 2.37$, an electronic temperature of 11500 K and an electronic density of 1×10^4 cm^{-3}. Abundances were calculated for oxygen, nitrogen, sulphur, argon and helium, leading to values similar to the solar ones. A distance of 6 kpc was found, that combined with an observed expansion velocity of 70 km s^{-1} gives a kinematical age of 1600 years. A mass, for the ionized material, of 0.02 $M_\odot$ is found, which indicates a mass loss rate to form the nebula of 10^{-5} $M_\odot$ yr^{-1}. The exciting star has an effective temperature of 26000 K and a total luminosity of 5.3×10^3 $L_\odot$. From the IRAS data a dust temperature of 10^7 K is derived. The elemental abundances values, its location in the H-R diagram, its kinematical age plus the mass loss rate required to form the nebula, indicate that this is a young planetary nebula.

A POSSIBLE JET/COUNTERJET ASYMMETRY IN STELLAR OUTFLOWS

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Recent analyses of narrow band CCD images of bipolar stellar jets show that in several cases a large difference between the jet and the counterjet opening angles (α_{jet} and $\alpha_{counterjet}$, respectively) is present.

These results can be successfully interpreted in terms of nonadiabatic de Laval nozzle models. We show that if the stratification of the environment is different for each outflow direction, the most likely values for the ratio between the opening angles of the jets produced by the two oppositely directed nozzles agree with the observed values. The best agreement is obtained if we assume that the nozzles have initial temperatures of the order of 10^6 K.

NEAR-INFRARED IMAGES IN THE HERBIG-HARO 1-2 AND 3 REGIONS

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Near-infrared images of the low-mass star formation region associated with the Central Source of the Herbig-Haro objects 1 and 2 are presented. Several new HH-type condensations are found in the vicinity of the previously detected radio source thought to power the HH 1-2 system. The central condensation is found to have three components, two of which change their position as a function of wavelength. The whole region resembles a projected ovoidal cavity and seems to be dominated by a combination of reflected light from a young star and material shocked by a powerful stellar wind. New infrared sources associated with a nearby H_2O maser and the HH-3 object are also discussed. While these sources are obviously part of a large scale star formation structure, they seem unrelated to the HH 1-2 system.

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PHYSICAL CONDITIONS AND KINEMATICS OF THE ENVELOPE OF V645 Cyg

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We observed the Bipolar Reflection Nebula V645 Cyg using the Intermediate Dispersion Spectrograph on the 2.5-m Isaac Newton Telescope.

The spectra provide evidence for mass loss: the half width of Hα at zero intensity exceeds 800 km s^{-1}, whilst the Balmer emission lines and the Fe II (42) display P-Cygni profiles. If the wind is accelerated close to the star, it is apparent that the narrower Fe II emission