TH 28: A NEW BIPOLAR HERBIG-HARO JET*

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A bipolar Herbig-Haro jet system associated with the emission-line object Th 28 has been discovered from direct CCD-imaging, long-slit spectroscopy, and broadband infrared observations. The observations were carried out using the facilities of the European Southern Observatory, La Silla, Chile. A direct CCD-image taken through a narrow band H_α interference filter is shown in Figure 1.

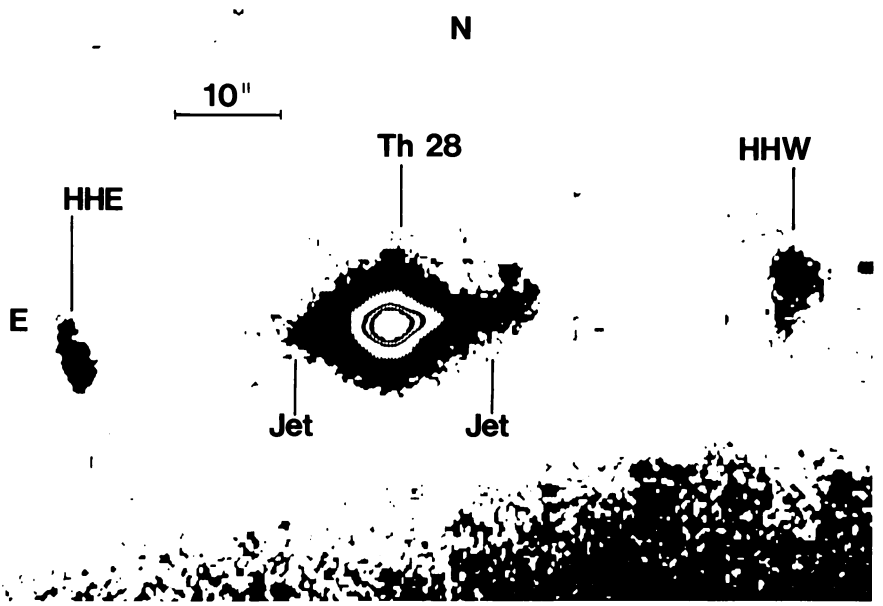

Figure 1. 120m H_α CCD-exposure of the Th 28 Herbig-Haro jet system.

* Based on observations collected at the European Southern Observatory, La Silla, Chile

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Two oppositely directed jet-like structures (length 0.008 and 0.009 pc) are emanating from a central star-like source, and two Herbig-Haro objects (Th 28-HHE and Th 28-HHW) are located on both sides exactly on the axis defined by the bipolar jets at distances of 0.020 and 0.024 pc, respectively. The system shows a remarkably simple structure. It exhibits the highest degree of symmetry known yet for any comparable system, indicating that the interstellar medium around Th 28 has a high degree of homogeneity. A strong variation of the electron density by about two orders of magnitude along the jets has been detected. The line-of-sight velocity for both jets and HH objects is ±40 km s^{-1} only. A proper motion of 0".5/yr found for Th 28-HHE corresponds to a tangential velocity of 316 km s^{-1}.

The observations strongly suggest that Th 28 is a new case of a bipolar, well-collimated high-velocity outflow from a stellar object in a star-forming region. The low luminosity ($L \geq 0.015\ L_{\odot}$) of the powering source of Th 28 indicates the presence of a highly opaque disk-like circumstellar cloud orientated perpendicularly to the outflow of material.

A more complete description of these results is published in Astron. Astrophys. 161, 195 (1986).

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