TARTER: I believe that X-ray line cooling will dominate bremsstrahlung at temperatures of 10^6 K. The diffuse emission in X-rays could have an observable effect on high ionization trace species such as Fe XIV.

DOPITA: The enhancement of X-ray cooling of the hot gas in non-equilibrium ionization conditions cannot be neglected. The large ionization time-scale of hydrogen- and helium-like ions ensures that a large amount of collisional excitation of their lines occurs. This raises the emissivity to about 30 times the equilibrium value.

HBV 475 AS A CANDIDATE PROTO-PN

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The symbiotic nature of this object has been investigated by optical spectroscopy and photometry in the near infrared region. There are three components, which are (i) the ionized expanding envelope consisting of two layers of low and high excitation species, (ii) the late type component corresponding to a blackbody of 2500 K and indicated by TiO absorption band, (iii) the hot remnant star whose temperature is estimated indirectly as 150 000 K or more.

Recently a high dispersion spectrum with self scanning diode array detector was obtained. If we assume circular motions in the Galactic plane, we can estimate the distance as 9 kpc with the aid of the radial velocity. In this spectrum, we can also clearly see Fe I absorption lines (λ 4325.8, 4383.6, 4404.8) shifted to the violet by about 10 Å ($= -750$ km s^{-1}) as well as broad Hγ and [O III] λ 4363 emission lines. In order to interpret these absorption lines, a single star hypothesis may be preferable.

On the basis of IR photometry and radio data, the dimensions of both the ionized expanding envelope and the late type component can be estimated. It should be considered that the late type component is extremely small and perhaps is embedded in the ionized expanding envelope.

To explain the observed data, a schematic model is proposed. (Papers will appear in Publ. Astron. Soc. Japan).

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