OPTICAL AND INFRARED OBSERVATIONS OF THE PECULIAR PLANETARY NEBULA HE2-442

V.P. Arkhipova, V.F. Yesipov, and B.F. Yudin
Sternberg Astronomical Institute
117234 Moscow, USSR

ABSTRACT. Infrared observations of He2-442 carried out at Crimean Station of Sternberg Institute during 1984-1986 revealed that in the past ten years the 1-10 μm flux has decreased by factor \( \sim 2.4 \), the colour temperature determined from (K-L) index has decreased by \( \sim 300 \) K, and the infrared energy distribution has been changed also essentially. However, the definite cool star features, for example, Mira-like variability was not yet recorded.

In the optical spectra of He2-442 the low and high ionization emission lines of FeII, HI, HeII, [ArV], [FeVII] and forbidden lines with different critical density from \( \sim 5 \times 10^5 \) cm\(^{-3}\) for [S II] 6716 Å to \( \sim 5 \times 10^6 \) cm\(^{-3}\) for [ArV] 7005 were identified. Thus in the gaseous envelope of He2-442 the regions of low and high density exist. There were also observed the small brightness variations of the star (ΔV = 0.25 between two nights in 1983).

It was found that He2-442 contains two emission line sources: a large (≤ 7") nebula of a low surface brightness and a stellar source inside of the latter. However spatial structure of He2-442 is not yet investigated in detail.