

APPARENT MAGNITUDES OF PLANETARY NEBULAE NUCLEI

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B and V magnitudes for the central stars of a number of planetary nebulae are presented. The observations were obtained between 1971 and 1981 with the University of Illinois one-meter telescope at Prairie Observatory. The average magnitudes presented are accurate extractions of the stellar continuum flux from the total (stellar plus nebular) measured flux (see Kaler, 1976, *Astrophys. J.*, 210, 113).

The nebular continuum flux was calculated upon the best available values (and associated uncertainties) of the measured $H\beta$ flux, the electron temperature, electron density (from which we obtained the contribution from 2-quantum emission), the He^+/H^+ and He^{++}/H^+ ratios, and the logarithmic extinction at $H\beta$. The uncertainties in the above quantities were propagated through the entire calculation to provide a correct evaluation of the resulting uncertainty in the quoted magnitude. Finally, when the central star contributed only a minimal fraction of the continuum, we were able to set realistic upper limits to the magnitudes.

The method used here is the best available for the determination of B and V central star magnitudes, and is probably the only reliable method for compact planetaries. As a test case, the B and V magnitudes for the nucleus of NGC 7662, which contributes only $\approx 20\%$ of the total nebular continuum, agree well with those derived from the IUE data by Harrington et al. (1982, *M.N.R.A.S.*, 199, 517).

UBV-OBSERVATIONS OF VARIABLE PLANETARY NEBULAE

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The UBV- and spectral observations of several variable planetary nebulae were continued at the Crimean Station of Sternberg Astronomical Institute.

During 1968-1981 the planetaries NGC 6572, IC 4997, Hu 2-1, and NGC 6891 showed systematic changes of total brightness within the ranges of $0^m.2 - 0^m.4$. Moreover, the nebula NGC 6572 became progressively brighter in filter V, but IC 4997 fainter in each of three filters. At the same time, the nebulae NGC 6720 and IC 3568 showed no variations of brightness exceeding $0^m.1$. (see Figure).

The preliminary results of spectral observations are in agreement with the photoelectric measurements, namely, the nebulae with larger changes of the UBV-brightness show larger variations of the emission line intensities.

The method of our photoelectric study was described in *Mém. Soc. Roy. Sci. Liège, 6-e sér., tome V, p.473, 1973*; the summary results of the UBV-observations in 1968-1980 are published in the *Astron. Circular Acad. Sci. USSR, No.1166, p.4, 1981*.

