The planetary nebula IC 3568, suspected earlier of variability, showed essentially no variations of brightness to either method of observations.

The nebula NGC 6721, measured as a whole, also appeared to be constant during the observed seasons of 1968-1975.

The detailed results will be published in Astr. Zh. U.S.S.R.

References: 1. Kostyakova, E.B., Arhipova, V.P., and Savel'eva, M.V., Mém. Soc. Roy. Sci. de Liège, 6^{e} sér. t.V, p. 473, 1973.

ULTRAVIOLET PHOTOMETRIC VARIATIONS IN THE CENTRAL STAR OF IC 418

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Ultraviolet photometric observations of IC 418 taken with the Netherlands Astronomical Satellite (ANS) indicate variability in the central star brightness. The variations occurring on the time scales of 5 hours are only 4% at 3300 Å but increase to about 15% at 1550 Å. The observations were not made frequently enough to determine a periodicity, if one exists. There are also 5-10% changes in brightness observed in A78 and NGC 6543, these are probably due to spectral changes in the central star spectra. About 10% type variations were found in VV 1-7 and He 2-131 but their interpretation is not clear.

A careful search failed to reveal any other variations (>10%) in the planetary nuclei observed with ANS.

THE EFFECTIVE TEMPERATURE OF THE CENTRAL STAR, AND A CRITERION FOR COMPLETE ABSORPTION OF HYDROGEN IONIZING PHOTONS BY THE NEBULA

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With the new measurements of the central star between 1500 Å and 3300 Å, practically the entire continuous emission has been measured or can be deduced if the nebula is optically thick for hydrogen and helium ionizing radiation. The effective temperature can then be found directly, if the ratio of the radius to the distance of the star is known. This latter quantity can be determined with different assumptions: that the

brightness temperature in the visual is equal to the effective temperature is a reasonable assumption, with the advantage that even if it is not quite correct, the resultant effective temperature is only affected in a small way.

What criterion does one use to determine whether or not all the hydrogen ionizing photons have been counted? This is done by plotting the ratio of the flux between λ228 - λ912 Å, to the flux with λ > 912 Å (which can be determined observationally) against the effective temperature, and comparing this with the expected value. (Paper will appear in Astronomy and Astrophysics.)

THE POSITION OF CENTRAL STARS IN THE HERTZSPRUNG-RUSSELL DIAGRAM

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The determination of total luminosity and effective temperature recently reported on sometimes (but not always) differ in a substantial way from the determination of these quantities from HeII Zanstra method. For example, differences in luminosity exceeding a factor of 10 have been noted. The resultant effect on the Hertzsprung-Russell diagram is presented and discussed. (Paper will appear in Astronomy and Astrophysics.)

TIME-DEPENDENT EFFECTS IN PLANETARY NEBULAE CAUSED BY THERMAL PULSES IN CENTRAL STARS

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Nuclei of planetary nebulae are suspected to go through thermal pulses. A time scale of such pulses is of the order of $10\text{-}10^3$ years and so it is comparable with the time of recombination in a typical planetary nebula. Theoretical models have been constructed to study evolution of ionization structure of nebulae in which the spectrum of ionizing radiation varies with time. Resulting intensities of emission lines are compared with those produced by stationary model nebulae.

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