

ABSTRACTS OF CONTRIBUTED PAPERS

OBSERVATIONS OF NGC 7662 FROM 1300 TO 2850 Å

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An ultraviolet spectrum of NGC 7662 was obtained with a rocket-borne telescope in a 130 s exposure using a microchannel plate detector and film. In addition to the three strong ultraviolet lines of C III], C IV, and He II seen previously in NGC 7027, a new strong line of [Ne IV] at 2440 Å and a prominent continuum were measured in NGC 7662. The observed fluxes are given for both the lines and the continuum on an absolute basis, with a typical accuracy of about 25 percent. The absolute calibration is based primarily on in-flight observations of the stars α Lyr and α And, which have been well measured in the ultraviolet. This calibration is confirmed by laboratory data and by photoelectric observations from the ANS satellite.

The correction for interstellar extinction with $E(B-V)=0.22$ has been determined on the basis of the observed and calculated line ratios for the hydrogenic recombination line of He II at 1640 Å to H β . (Paper will appear in The Astrophysical Journal.)

INTERPRETATION OF THE ULTRAVIOLET SPECTRUM OF NGC 7662

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The ultraviolet emission lines that were measured in the spectrum obtained from our rocket observation of NGC 7662 have been compared with those predicted by a set of models. The models allow a determination of the carbon abundance which is found to be solar and the C/O ratio which is equal to unity. In order to obtain a good fit, dielectronic recombination and charge exchange between neutral hydrogen and C IV were included, both of which increase the concentration of C III. The observed continuum consists of light from the central star and from the nebula, which contributed primarily via the two photon process in the H $^{\circ}$ and the Balmer continuum.

DISCUSSION

Davidson: How intense are the UV carbon lines, relative to visual lines?

Stecher: In terms of H β being 1200, the combined two are 1280, approximately equivalent to the [OIII] lines.

Zuckerman: Have you an explanation for the large discrepancy between you and the Peimberts for the carbon abundance in NGC 7662? Have you or anyone else detected carbon lines in the ultraviolet from the Orion Nebula, and if so, can you derive a carbon oxygen ratio for Orion?

Stecher: The Orion Nebula has been observed by us and the strong CIII and CIV lines are not present since the temperature is much lower. We do see CII at $\lambda 2323$ and can probably get a carbon abundance from it. The Orion spectrum is primarily one of reflected starlight from the dust.

Tarter: Do your ultraviolet observations show any evidence of the MgII line (~ 2800 Å) which is found to be very strong in quasars (which also have strong CIV and CIII lines)?

Stecher: It was just in our range and we didn't notice an image.

THE DETAILED SPECTROPHOTOMETRY OF 8 PLANETARY NEBULAE IN THE SPECTRAL REGION $\lambda\lambda 6,000-11,000$

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The detailed spectral study in the region $\lambda\lambda 6,000-11,000$ of eight planetary nebulae: NGC 6210, 6572, 6891, 7662, IC 2149, 4593, 4997 and BD+30° 3639 was carried out at the Crimean Station of Sternberg Astronomical Institute, using the 125-cm parabolic reflector with the contact image tube.

The absolute energy flux in emission lines was measured and used for determination of the principal physical parameters of nebulae studied: the electron temperature, T_e , the electron density, N_e , and the interstellar extinction.

The energy distribution in the merged continuum from nebula and nucleus was studied, and the separation of these two components was carried out.

The observed continuum in the studied spectral interval can entirely be explained by the Planck radiation of the nucleus and the recombination theory of planetary nebulae.