It turned out that for some PN the abundance of C and, probably, N is higher than in the Sun.

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RADIATIVE TRANSFER EFFECTS DUE TO CURVATURE AND EXPANSION IN A DUSTY PLANETARY NEBULA

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We have investigated the effects due to curvature and radial expansion in a planetary nebula, with hydrogen and helium. We have solved the radiative transfer equation with spherically symmetric approximation in the rest frame. We have included dust in static as well as in expanding media. The effects on the internal sources and the mean intensities at the internal points have been calculated. It is found that the effect due to the presence of dust is to reduce the mean intensities, and curvature effects on the internal sources are more pronounced than the effects due to radial expansion of the gas.

PROFILES AND INTENSITY RATIOS OF THE C IV λ1548, 1550 EMISSION LINES IN PLANETARY NEBULAE

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The C IV resonance doublet at λ1548, 1550 is an important diagnostic tool in the study of planetary nebulae. The predicted theoretical intensity ratio of 2 : 1 is, however, rarely observed in high dispersion

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IUE spectrograms. The observed values for a sampling of 15 objects of differing excitation class range from a low of 0.74 to a high of 1.99. Variations in optical thickness, extinctions due to nebular dust, and interstellar absorption have been proposed as the cause for the deviation. Line profiles for the C IV doublet vary for different nebulae, encompassing a wide range of shapes which include: 1) narrow symmetric (Gaussian) profiles, 2) wide symmetric, 3) asymmetric with steep blue edge and extended red wing, 4) asymmetric with steep red edge and extended blue wing, 5) P Cygni profiles, 6) split peaks due to expansion velocities, and 7) multiple peaked or chaotic line structure. In addition to the main features, occasionally weak (subsidiary or ghost?) features occur that do not agree in intensity with the main line ratios but are not attributable to lines of other ions. Ultraviolet radial velocity displacements are in good agreement with optical data. Similar diversity in profiles and intensity ratios have been observed in proto-planetary nebulae and symbiotic stars. (Paper to appear in Astron. Astrophys.)

HIGH DISPERSION IUE OBSERVATIONS OF NGC 3918

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Our results are based on SWP 3215, a 120 min large aperture exposure. The electron density derived from N IV], Si III] and C III] ratios are log N_e < 4.3, 5.0 and 3.5. The measured resonance line ratio 1239/1243 of N V is 1.2 ± 0.1 and 1549/1551 of C IV is 1.9 ± 0.2. Both ratios are expected to be 2.0. Furthermore, it had already been reported that the C IV and N V resonance lines are fainter than predicted from models by factors from ∿ 4 to ∿ 6 (Torres-Peimbert et al., 1980, The First Two Years of IUE, NASA CP-2171, 641). Internal dust cannot account for any significant deviation from 2 for the resonance doublet ratio of N V (Hummer and Kunasz,1980, Ap. J., 236, 609). However, the anomalous ratio of N V could be explained by a generally distributed hot ionized medium compatible with the C IV absorption found in approximately the same direction by Cowie et al. (1981, Ap. J., 248, 528).

More observations with different exposure times should be obtained; in our material the bright lines were overexposed and the ratios of C III] and C IV were derived from the wings.

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