Spectrophotometric Studies of Planetary Nebulae with [WR] Central Stars

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We present the first results of a project on PNe with [WR] nuclei whose aim is twofold. One is to search for possible spatial abundance variations inside the nebula. The other is to check whether, for each object, one can build a self-consistent photoionization model (with the code PHOTO, Stasińska 1990, A&AS, 83, 501) using, as an input, the ionizing radiation field from an expanding model atmosphere reproducing the observed stellar lines of He, C and O (Koesterke et al., these proceedings).

The first objects under study are PB 6, NGC 2452, NGC 2867, NGC 6905, and He 2-55, for which we have obtained optical long-slit spectrophotometric data. Additional information comes from UV data from the IUE archives.

For most of the objects, a classical constant density photoionization model does not reproduce all the observational constraints (the ionization structure, the strength of HeII λ4686, the temperature- and density-sensitive line ratios, etc.). We were thus led to look for solutions involving two-component density structures. Satisfactory agreement is reached for a number of our objects. However, some objects resist such a modelling procedure. Probable reasons are either an inadequate representation of the ionizing radiation field at energies higher than 54 eV, and/or additional contribution of shock heating.

Elemental abundance ratios in different zones of the nebulae are then estimated using the "best fit" photoionization model to evaluate the distribution of the electron temperature and to correct at best for unseen ions.

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