

THE ABSORPTION OF HeII Ly $\alpha$  PHOTONS IN PLANETARY NEBULAE

D.R. Flower\* and M. Perinotto\*\*

\*Observatoire de Meudon, Paris

\*\*Astrofisico di Arcetri, Firenze

The fate of the HeII Ly $\alpha$  photons, produced during recombinations of the He $^{++}$  ions and electrons, is important in considerations of the ionization and thermal structure of high excitation nebulae (Flower, 1968, IAU Symp. No. 34, Planetary Nebulae, p. 77). Hummer and Seaton (1964, M.N.R.A.S. 127, 217) effectively supposed that these photons are absorbed by H $^{\circ}$  in the central (He $^{++}$ ) zone, whereas detailed line transfer calculations (Weymann and Williams, 1969, Ap. J. 157, 1201; Harrington, 1972, Ap. J. 176, 127) suggest that a large fraction of the photons escapes from the central zone. We consider the effects of the absorption of these photons on the ionization and thermal structure of the outer (He $^{+}$ , H $^{+}$ ) zone of a nebula which is optically thick in the HI Lyman continuum. (Paper will appear in Astronomy and Astrophysics.)

## ECHELLE STUDIES ON THE SYMMETRICAL STRATIFIED PLANETARY NEBULA NGC 3918

M.A. Dopita

Mount Stromlo and Siding Spring Observatory, Australia

Coudé échelle studies of the symmetrical planetary southern nebula NGC 3918 at a resolution of 20 km/sec have shown a high degree of stratification of velocity of expansion with ionisation. The greatest velocity of expansion, 28 km/sec is observed in the [MgI] line at 4751 Å.