(iv) a cool envelope where temperature and expansion velocity decrease.

The physical parameters adopted for these regions are consistent with calculations performed by different authors, namely, (a) theoretical model atmospheres (Kurucz, ApJS, 40, 1, 1979), (b) equivalent widths of Si IV resonance lines (Kamp, ApJS, 36, 143, 1978), (c) ionization equilibrium — considering charge-exchange ionization and dielectronic recombination— (Sutherland & Dopita, ApJS, 88, 253, 1983), (d) periods of oscillations in stellar atmospheres (Costa, Fontenla, & Ringuelet, ApJ, 339, 314, 1989), (e) dissipation of weak shocks (Hearn & Vardavas, A&A 98, 230, 1981), (f) energy balance in MHD flows (Iglesias & Ringuelet, ApJ, 411, 342, 1993), etc.

Theoretical calculations applying this model reproduce Hα profiles (Cidale & Ringuelet, ApJ, 411, 874, 1993), IR excesses (Vázquez, Cidale, & Ringuelet, ApJ, 419, 286, 1993; Cruzado, this volume), Fe II line profiles (Paoli, this volume), observed polarization (Fox, MNRAS, 260, 513, 1993) and Mg II and Si IV line profiles (Cidale, in preparation).

In our present analysis we discuss the applicability of different symmetries in different regions, the density and temperature structure and the region of formation of the various features observed in the spectrum.

IONIZATION EQUILIBRIUM OF He IN THE WIND OF B STARS

René D. Rohrmann[1]

We calculate non-LTE populations of H and He for extended and expanding atmospheres of B stars. The atmospheric model is basically the same that was adopted by Catala, Kunasz, & Praderie (1984, A&A 184, 402).

We distinguish the following radial sequence of atmospheric regions: (1) a photosphere in radiative and hydrostatic equilibrium, (2) an expanding chromosphere, and (3) an isothermal cool envelope also in expansion. The velocity law considered increases with radius towards an asymptotic value. The essential simplifying assumption we make is that all bound-bound transitions are in detailed balance. We compute the continuum radiation field using Feautrier's method applied to spherical geometry.

The results obtained from a grid of models show that the ground states of H and He become overpopulated (large departures from LTE) in the outer layers (above the photosphere). These departures are strongly governed by the radiation field in the hydrogen Lyman continuum, due to the fact that the transition rates involved are dominated by radiative terms.

The inclusion of the bound-bound terms in the solution of statistical equilibrium equations will be treated in future calculations.

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A NEW HIGH DISPERSION SPECTROGRAPHIC STUDY OF AU MONOCEROTIS

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New observations of AU Mon were secured at the CTIO with the coude spectrograph attached to the 1.5-m telescope with a dispersion of 9 Å mm^{-1} in the blue region and 18 Å mm^{-1} in the red. Additional echelle images were obtained at the CASLEO with the REOSC spectrograph attached to the 2.15-m telescope.

Lines of Fe I and Na I of the component which is in front at the primary eclipse were detected and measured for radial velocities. These lines were used, together with the He I lines of the primary spectrum, to determine the orbital elements of the two components of the system.

The radial velocities of the Balmer lines show the presence of the well known gaseous stream, and the behavior of the variable emission in Hα displays strong variations when consecutive cycles are considered.

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