which characterizes the Sandage period-shift effect, since Sweigart's tracks are known to be more reliable than Lee & Demarque's (cf. Dorman 1992, ApJS, 81, 221).

RIGOROUS TREATMENT OF THE RADIATIVE TRANSFER EQUATION IN A SPHERICALLY SYMMETRIC MEDIUM WITH VELOCITY FIELDS APPLIED TO LINE PROFILES OF Be STARS

Lydia S. Cidale[1] and Adela E. Ringuelet
Fac. de Ciencias Astronómicas y Geofísicas
Universidad Nacional de La Plata, Argentina

We have computed Hα line profiles in an expanding atmosphere with a chromospheric temperature structure. The radiative transfer equation has been treated rigorously in a spherically symmetric medium, applying the comoving-frame method. The simultaneous solution of the statistical equilibrium equations were carried out for a hydrogen atomic model considering 6 energy levels plus continuum. Our calculations show that the morphological characteristics of the Hα profile –P Cygni, double-peaked or single-peaked emission– are strongly determined by the structure of the wind in the atmospheric layers close to the central star (the base of the wind and the immediate subphotospheric regions) rather than in the cool envelope. Our models indicate that the cool envelope only contributes to the global intensity of the Hα emission profile. These results provide an alternative interpretation of the Be phenomenon, in terms of the source function behaviour.

[1] CONICET, Argentina.

NEW DDO ABUNDANCE CALIBRATIONS FOR POPULATION I AND II RED GIANTS: APPLICATION TO THE STUDY OF THE CHEMICAL EVOLUTION OF THE DISK

J.J. Clariá[1], A. Piatti[1],
D. Minniti[2], and E. Lapasset[1]

Using new DDO data and abundances derived from high dispersion spectroscopy of G and K giants, new DDO abundance calibrations for population I and II giants are established. The relation between cyanogen anomaly and [Fe/H] is redefined for the $-0.8 < [Fe/H] < +0.3$ range. The blanketing vectors in the DDO two-color diagrams and a new abundance index $\delta 4548$, which is well correlated with [Fe/H] even for extremely low metallicities ([Fe/H] = −3.0), are determined. For the first time isoabundance lines in the DDO two-color diagrams are presented. The new calibrations show in general good agreement with the Friel & Janes (1992, A&A, in press) and Zinn (1985, ApJ, 293, 424) scales for open and globular clusters, respectively. New DDO abundances of 72 open clusters younger than 8 Gyr show the existence in the disk of radial ($d[Fe/H]/dR_{gc} = -0.08 \pm 0.01$ kpc) and normal ($d[Fe/H]/dz = -0.40 \pm 0.04$ kpc) gradients, whereas the inexistence of a pronounced age-metallicity relation is confirmed. These results, combined with some very recent ones by Geisler, Clariá, & Minniti (1992, AJ, in press), show a very good agreement with the theoretical predictions of the chemodynamic models by Burkert et al. (1992, ApJ, 391, 651).

[1] Observatorio Astronómico de Córdoba, Argentina.
[2] Steward Observatory, University of Arizona, U.S.A.

THE MOMENTUM PROBLEM IN WOLF-RAYET STARS

L.C. dos Santos, V. Jatenco-Pereira, and R. Opher
Instituto Astronômico e Geofísico
Universidade de São Paulo, Brazil

One of the more promising acceleration mechanisms suggested involves the driving of the mass loss by an outward-directed flux of Alvén waves. Hot and massive O, B and Wolf-Rayet stars are the source of very strong stellar winds. In general, radiation pressure on the gas has been suggested for driving these winds. Radiation pressure models, however, have difficulty in explaining several observational characteristics of these stars. Concerning Wolf-Rayet stars, for example, there exists disagreement between the observational mass loss rates and the maximum predicted mass loss for radiation pressure driven winds, creating "the momentum problem". We investigate a model for mass loss in Wolf-Rayet stars, where both a flux of Alfvén waves and radiation pressure are important. Our results show that Alfvén waves may be supplying the needed momentum for the wind.