THE NONHOMOGENEOUS DISTRIBUTION OF ABUNDANCES AND THE MAGNETIC FIELD MEASUREMENTS IN CP STARS.

F.A. CATALANO
Istituto di Astronomia dell Universita
Citta Universitaria
I 95125 CATANIA
ITALY

ABSTRACT. The influence of the non homogeneous distribution of the abundance of elements on the magnetic field measurements in chemically peculiar stars is discussed.

Magnetic fields in chemically peculiar stars of the upper main sequence are revealed by measuring the changes in the absorption line profiles and or the polarization in the lines induced by the Zeeman effect. Measurements of the circular polarization in spectral lines allow to determine the effective field (Beff) which is the mean value of the magnetic field component in the line of sight direction. In a very few stars, measurements of the spectral line splitting allow to compute the surface magnetic field (Bs).

Most part of magnetic data available in the literature are Beff values, but they are not a homogeneous set: to compare values from different observing sites some transformations are needed (Hensberge et al. 1979). The Beff values are also average values over different ions and elements and this causes loss of informations since stratifications of the ions of a given element may occur and patchy distributions of the abundances of elements are undoubtely ascertained. But the biggest problem to be faced in this context is given by the influence of this generally accepted nonuniform distribution of abundances on the magnetic field measurements. Some general relationship, such as the often observed coincidence of the extrema in the line strengths and magnetic fields, is generally accepted to exist but no quantitative investigation has yet been done. Really the problem is a very complicate one but we think some progress could be obtained if we first try to evaluate the polarization in a changing line profile for a very simplified case and then to look for applying the obtained results to a more realistic case. This is beeing done at the Astronomy Institute of Catania University.

Hensberge H., van Rensbergen W., Goossens M., Deridder G.: 1979 Astron. Astrophys. 75, 83.

C. R. Cowley et al (eds.), Upper Main Sequence Stars with Anomalous Abundances, 149.