

bright and rising granules statistically dominates over the contribution from dark and sinking intergranular lanes. Fainter lines (formed deeper) show larger blueshifts than strong lines; high-excitation lines usually are more blueshifted (preferentially formed in the hotter granules) and short-wavelength lines are more blueshifted because of increased granulation contrast there. Detailed studies of line bisector behavior as function of line parameters permit the construction of model atmospheres incorporating convective hydrodynamics. The method does not require spatially resolved observations and can be extended to studies of stellar convection.

DIFFERENTIAL LINE SHIFTS IN LATE TYPE STARS

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Abstract

The differential line shifts method for studying convective type motions has been described in the review of Glebocki and Stawikowski at this colloquium. Here the results of differential line shifts for twenty late type stars are presented. Line shifts were determined either from published wavelength measurements (α Cmi, β Peg, α Boo, α Ser, α UMa, α Per, α Sco, γ Cyg, α Car and HD 19445) or from my own wavelength measurements on 8.1 Å/mm dispersion spectra (56 Ori, η Peg, η Psc, 61 Cyg A, ϵ Eri, δ Eri, \circ Tau, ϵ Cyg, α Aqr and ι Ari). Because of low accuracy of the wavelength determinations, mean shifts (VR) were calculated for narrow ranges of lower excitation potentials (LEP). These shifts were plotted against excitation potential and VR-LEP relations were obtained for all analysed stars. Because of the scatter of points in these diagrams linear approximation was assumed and the slopes (denoted A and expressed in Km/s/eV) of the VR-LEP relations were calculated. The stellar parameters and the derived slopes for the whole sample of investigated stars were analysed, and correlations with microturbulence, luminosity and gravity were found. These correlations demonstrate that the slope of VR-LEP relation describes some component of velocity field in late type stars.

The detailed description of the procedure and results will be published in Acta Astronomica.