EXCITATION DEPENDENT GF-VALUES AND DEPTH DEPENDENT MICROTURBULENCES

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Abstract

The velocity of microturbulence is frequently determined from Fe I lines. Unfortunately classical gf-values of this element have excitation dependent errors. In the absolute curve of growth analysis of some F-type stars with new gf-values, the author found that a great part of the depth dependence (i.e. excitation dependence) of microturbulent velocity, which had been derived by many authors with old gf-values, is the consequence of these errors.

The errors of old gf-values increased with excitation potential and the errors were compensated by adopting velocities of microturbulence decreasing with excitation potential. On the other hand, gf-values of ionized elements (e.g. Ti II and Fe II) are not changed as much as those of Fe I, accordingly the ionization dependence can also be eliminated.

ON THE STRUCTURAL AND STOCHASTIC MOTIONS IN THE SOLAR AND STELLAR ATMOSPHERES

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Abstract

Existence of discrete structures of velocity $\bar{V}$ and magnetic field $\bar{B}$ in stellar atmospheres follows from the Vlasov's integral equation

$$\int \mathfrak{F} d\tau = F(v\,\bar{B},\ T\ldots) \qquad (1)$$

where $\mathfrak{F}(u,\dot{v},r)$ is a statistical function of the distribution of the elements of matter having masses $m = \frac{\rho}{\dot{v}}$ and velocities, v, $d\tau$ is elementary phase volume, F is functional which arrange the ties between macrovelocity, magnetic field, temperature, etc., providing self containment of cosmic plasma. The self containment of cosmic plasma

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