bulence in the atmosphere is investigated. It is shown that parameter ξ_t increases outwards from about 0-1 km/s at the optical depth τ_{5000} = 0.2 to 10 km/s at the depth $\tau_{5000} = 10^{-3}$. Deduced function $\xi_t(\tau_{5000})$ gives the same iron abundance log ε(Fe) = 7.45 ± 0.05 for all groups of Fe I lines. The detailed analysis will be published in Izv. Crimean Astrophys. Obs.

THE SOLAR CHROMOSPHERIC MICROTURBULENCE AND THE EMISSION OBSERVED AT ECLIPSE

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Abstract

For a long time there was not a clear interpretation of the fact that the emission observed at eclipse is systematically too high compared with predictions based on disk observations. This discrepancy has been attributed to the hydrogen density, the atomic abundances, or the multiplet excitation temperatures, the physical cause being assumed to be some inhomogeneities. We have shown (Liege 1978, under press) that it can be attributed to the microturbulence. The radiative energy absorbed in the doppler width of the absorption profiles of lines, produces high excitation temperatures. The relative abundances of Ba II, Sr II, Ti II with these excitation temperatures are in agreement with the photospheric abundances.

Assuming photospheric abundances, we get the hydrogen density versus the altitude while the observations give $n_e n_p/T_e^{3/2}$. The solution of these two equations, taking account of non-LTE for hydrogen but without the assumption of hydrostatic equilibrium, gives a chromospheric model. The model obtained is very near the usual quiet chromospheric models based on disk data.

This work confirms the validity of our assumption of the influence of microturbulence on the chromospheric emission observed at eclipse.

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