

RELATIONSHIP BETWEEN ENVELOPE STRUCTURE AND ENERGY SOURCE OF NON-THERMAL MOTIONS

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Abstract

The ionization zone in the envelope of the late type stars is reasonably considered as a heat engine to transform some of the radiative energy into mechanical energy. This idea is suggestive for explaining Linsky and Haisch's (1979) observation, which shows the sharp division into solar-type and non-solar type stars in the outer atmosphere. Also non-thermal velocity fields in "microturbulence" and in Wilson-Bappu effect are proposed to be formed essentially from this engine. Therefore, their envelope structure dependence observationally obtained is possibly explained by the envelope parameters (g , T_e) dependence of the generated mechanical energy flux in this layer. If "microturbulence" is not contaminated by the other surface activities, it is expected to show a clear relation with envelope parameters (g , T_e) similar to Wilson-Bappu effect.

AN ANALYSIS OF MICROTURBULENCE IN THE ATMOSPHERE OF THE F-TYPE SUPERGIANT GAMMA CYGNI

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Abstract

We have analysed high dispersion spectra of the supergiant γ Cyg (F8 Ib). On the basis of the curve of growth method it has been shown that there is no dependence of microturbulent velocity ξ_t on excitation potentials of spectral lines. Using model atmospheres we considered about 100 Fe I lines and found that no constant value ξ_t makes possible to remove the systematic discrepancy in iron abundance between groups of lines with different equivalent widths. The depth dependence of microtur-