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A New Approach of the GR Model

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1. Introduction

In the spectra of Hot Emission Stars (Oe and Be stars) we observe peculiar line profiles. In order to explain this peculiarity, we propose the DACs (Bates & Halliwell 1986) and SACs phenomenon (Danezis et al. 2005). We study these phenomena using the GR model, which presumes that the regions, where the spectral lines are created, consist of a number of independent and successive absorbing or emitting density regions of matter (Danezis et al. 2007). Here we are testing a new approach of GR model, which assumes independent but not successive density regions. Then, we compare the results of this method with the classical GR model that assumes successive regions.

2. Results - Conclusions

We study the density regions that produce the C IV ($\lambda\lambda$ 1548.155, 1550.774 Å) resonance lines in the spectra of the Oe stars HD 57061, HD 93521, HD 47129, HD 24911 and HD 49798, as well as the Fe II (λ 2585.876 Å) spectral line in the spectra of the Be stars HD 30386, HD 42335, HD 53367, HD 45910 and HD 200120. In Figs. 1 and 2 we present the results of our study. In all cases, comparing the results, the mean values of all the kinematic parameters do not depend on the applied method. This is what we theoretically expected. However, the method of the independent but not successive layers of matter gives higher values of the absorbed energy than the method of the independent and successive layers of matter.

References

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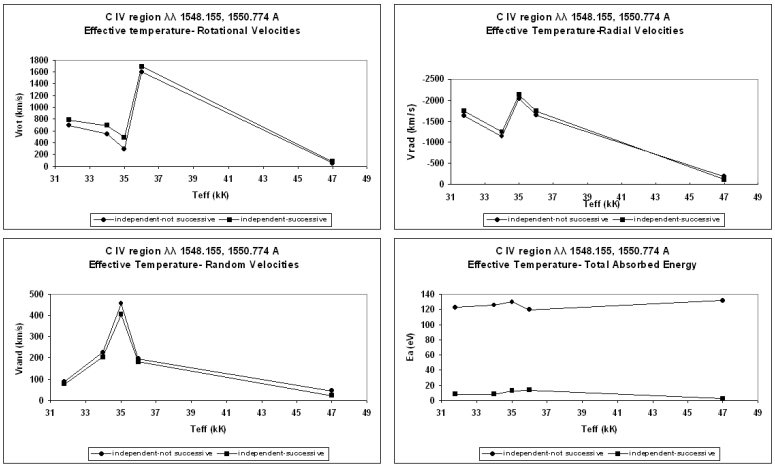

Figure 1.: Variation of the values of the rotational velocities (up-left), radial velocities (up-right), random velocities of the ions (down-left) and the total absorbed energy (down-right) as a function of the effective temperature of the studied Oe stars in the C IV ($\lambda\lambda$ 1548.155, 1550.774 Å) regions. The circles correspond to the case of independent but not successive layers of matter, while the squares correspond to the case of the independent and successive layers of matter.

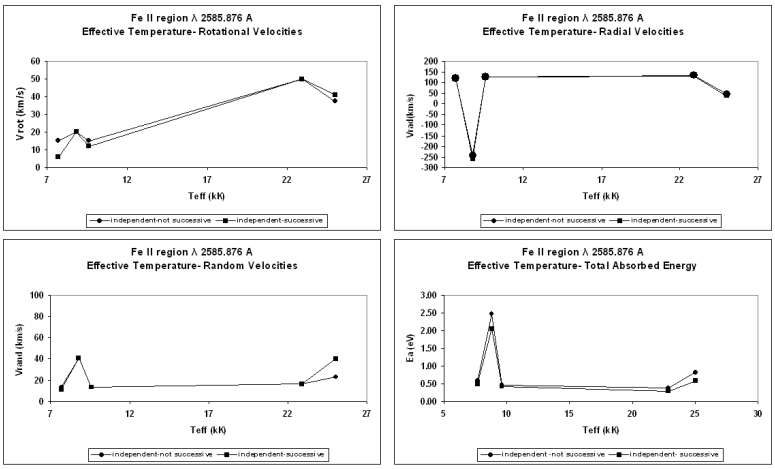

Figure 2.: Variation of the values of the rotational velocities (up-left), radial velocities (up-right), random velocities of the ions (down-left) and the total absorbed energy (down-right) as a function of the effective temperature of the studied Be stars in the Fe II (λ 2585.876 Å) regions. The circles correspond to the case of independent but not successive layers of matter, while the squares correspond to the case of the independent and successive layers of matter.