

The complex structure of the MgII $\lambda\lambda$ 2795.523, 2802.698 Å regions of 64 Be stars

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Abstract. In this paper we present a statistical study of the UV MgII resonance lines in 64 Be stars' spectra, using the method proposed by Danezis et al. (2003). With this method we can study the velocity fields of the complex atmospherical regions of MgII resonance lines $\lambda\lambda$ 2795.523, 2802.698 Å, which present SACs or DACs. We found that there exist three levels of rotational velocity with the mean values of 143 km/s, 60 km/s and 31 km/s. The respective mean values of the apparent radial velocity are -19 km/s, -13 km/s and -2 km/s.

1 Introduction

The MgII resonance lines present a peculiar profile in the Be stellar spectra and have been studied by many researchers [1-15]. They have observed the existence of absorption components shifted to the violet or the red side of the main spectral line [2-5], [8-13], [15]. These components have been named Discrete Absorption Components (DACs) [1] or Satellite Absorption Components [6]. When the components are quite narrow, they cannot be photospheric, but of circumstellar or interstellar origin [14]. In any case, the whole feature of the MgII resonance lines is not the result of a uniform atmospherical region, but the components are created in different regions, which rotate and move radially with different velocities. As de Jager et al. [7] proposed, in the late B supergiants variable mass loss occurs, due to "occasional stellar "puffs" superposed on a more or less regular wind". They proposed that "there are concentrations of low-ionization species in the stellar wind as a result of the occurrence of significant density variations".

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2 Data and Results

The data we used are the MgII resonance lines of 64 Be stars. The stars' spectrograms have been taken with IUE satellite with the Long Wavelength range Prime and Redundant cameras (LWP, LWR) at high resolution (0.1 to 0.3 Å).

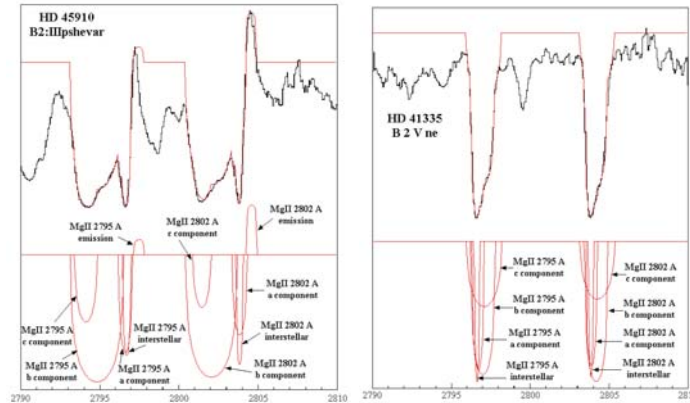


Figure 1 : The MgII resonance lines fittings of the star HD 45910, which presents DACs and of the star HD 41335, which presents SACs.

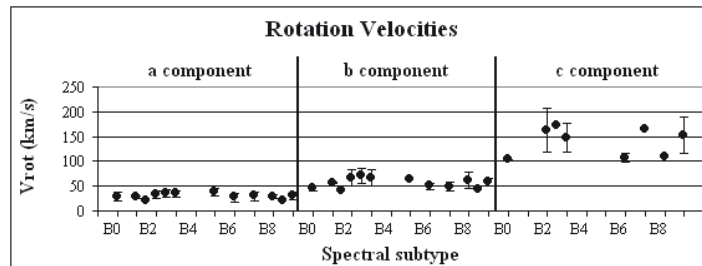


Figure 2 : Mean values of the apparent rotational velocities of the three SACs as a function of the spectral subtype. Three rotational velocity groups are presented, with the mean values of 31 km/s, 60 km/s, and 143 km/s. All these velocity groups do not appear in all the studied Be stellar spectra.

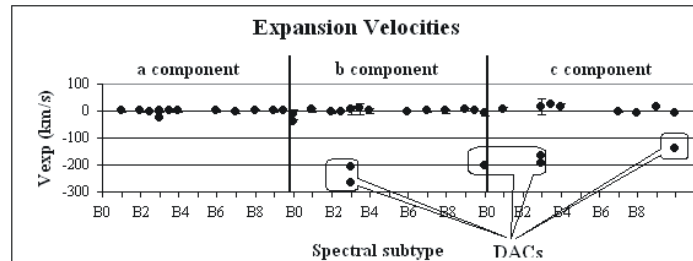


Figure 3 : Mean values of the apparent radial velocities of all the SACs as a function of the spectral subtype. The apparent radial velocity of all the SACs present the values of -2 km/s, 0 km/s and +9 km/s. In the case of the stars that present DACs, the apparent radial velocity is about -227 km/s and -169 km/s.

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