
Early B-type stars with resolved Zeeman split lines

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Abstract

Almost three decades ago, Mathys (1990) demonstrated the importance of studying Ap stars showing resolved Zeeman split Fe II 6147.7 and 6149.2 lines. Such Zeeman split lines can only be seen in stars whose projected rotational velocity is sufficiently small and whose magnetic field is strong enough to exceed the rotational Doppler broadening. Observations of resolved Zeeman split lines permit the diagnosis of the average of the modulus of the magnetic field over the visible stellar hemisphere, which allows us to set additional constraints on the field geometry. Furthermore, studies of radial gradients of magnetic fields in stellar atmospheres using magnetically split components lying on different sides of the Balmer jump are important to detect changes of the atmospheric structure in the presence of a magnetic field. Although Zeeman splitting is not expected in hot massive stars where rotation is not the only broadening mechanism shaping the line-profiles, we have recently been discovering three early B-type displaying magnetically split spectral lines. For these stars, we will discuss the Zeeman splitting of several spectral lines and present measurements of the mean magnetic field modulus.

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