

Curve fitting method of Stark width determination – example of H I line in G191-B2B spectrum

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Astrophysical applications of Stark broadening theory were intensively developed in the last hundred years. For example, Verweij (1936) among the others pointed out the importance of Stark broadening influence on spectral line shapes even in the core of Balmer lines measured in the spectrum of the objects with $\log g > 5$, e.g. white dwarfs. Since then, many scientific investigations have been done to prove significance of taking Stark width into consideration during spectral analysis of white dwarfs, even if the other elements have been investigated instead of hydrogen, where Stark broadening has affected more on wings than on the core of the spectral line. We propose here a simple curve fitting method for experimental determination of Stark width, using as an example of Ly β line in the spectrum of DA white dwarf G191-B2B. After comparison of our synthetic line with measured one, model of the white dwarf atmosphere can be used for determination of atmospheric depth where, according to our assumptions, the considered spectral line comes from originates.