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STARK WIDTH ESTIMATES FOR THE MOST PROMINENT Ce II SPECTRAL LINES IMPORTANT FOR ASTROPHYSICAL INVESTIGATIONS

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Abstract. Stark widths for the most intensive Ce II lines were estimated using the property of regularity and systematic trends found to exist among the Stark width parameters. Estimating formulae and temperature function were taken from nonlinear regresssion and cluster analysis comfirmed by machine learning method (Majlinger and Traparić, 2023), which proved to be more promising in this area of investigations than previously used similar formulae (for example, Cowley, 1971). Predicted accuracy of this approach, according to comparison with experimental data, is in a range between ±30% and ±50%, although predicted accuracy for using random forest algorithm with equivalent results is found to be around ±20% (Majlinger and Traparić, 2023). Ce II lines can be important in spectral investigation of Ap type of stars, where rare-earth elements are mostly overabundant.

References

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