

STARK BROADENING DATA FOR SPECTRAL LINES OF RARE-EARTH ELEMENTS: EXAMPLE OF Tb II, Tb III and Tb IV

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Stark broadening of rare-earth atom and ion spectral lines is of considerable importance in astrophysics due to rare-earth peak of abundance distribution of chemical elements. Consequently, a lot of spectral lines of these elements have been and will be observed in stellar spectra. The data on Stark broadening of rare-earth elements are scarce. It is worth to note that all existing Stark broadening data for lanthanides have been determined by the scientists from Belgrade astronomical observatory. I will give an analysis of actual state of art and review the existing theoretical determination of Stark broadening parameters of spectral lines of rare-earth elements Sc, Y, La, Eu, Nb, Yb and Lu in various ionization stages. Also will be presented and discussed actual possibilities for further determination of Stark broadening parameters and discussed plans for further work in this research field. Additionally, I will discuss the actual state of their implementation in STARK-B database.

As an example I will show the existing experimental energy levels for Tb II, Tb III, Tb IV and Tb V and discuss the possibilities to use them for the calculations of Stark broadening parameters. Finally I will show new calculations of Stark widths of Tb II, Tb III and Tb IV using simplified modified semiempirical method (Dimitrijević and Konjević, 1987).

References

Dimitrijević, M. S., Konjević, N.: 1987, *A&A*, **172**, 345.