ON SPECTRAL LINE STARK BROADENING PARAMETERS NEEDED FOR STELLAR AND LABORATORY PLASMA INVESTIGATIONS

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Abstract. Stellar spectroscopy depends on very extensive list of elements and line transitions with their atomic and line broadening parameters. It is difficult to state in general terms which are the relevant transitions since the atmospheric composition of a star is not known a priori, and many interesting groups of stars exist with very peculiar abundances as compared to the Sun.

The interest for a very extensive list of line broadening data is additionally stimulated by spectroscopy from space. In such a manner an extensive amount of spectroscopic information over large spectral regions of all kind of celestial objects has been and will be collected, stimulating the spectral–line–shape research.

Here is presented a review of semiclassical calculations of Stark broadening parameters and comparison of different semiclassical procedures is discussed, as well as the agreement with critically selected experimental data and more sophysticated, close coupling calculations. Approximate methods for the calculation of Stark broadening parameters, usefull especially in such astrophysical problems where large scale calculations and analyses must be performed and where a good average accuracy is expected, have also been discussed.

The begining and developement of line shapes investigations in Yugoslavia has been described as well.