

Short talk

**STARK BROADENING OF Cr II SPECTRAL
LINES IN STELLAR ATMOSPHERES**

M. S. Dimitrijević¹, T. Ryabchikova^{2,3}, Z. Simić¹, L. Č. Popović¹, M. Dačić¹

¹*Astronomical Observatory, Volgina 7, 11160 Belgrade, Serbia*

²*Institute of Astronomy, Russian Academy of Science,
Pyatnitskaya 48, 119017 Moscow, Russia*

³*Institute for Astronomy, University of Vienna,
Türkenschanzstrasse 17, A-1180 Vienna, Austria*

Cr is one of the most peculiar elements in the atmospheres of magnetic chemically peculiar stars, where a great number of Cr I and Cr II lines in large range of excitation energies are identified. Cr II spectral lines are third on number and intensity among metals, before Fe II and Ti II in Ae/Be Herbig Star V 380 Ori. Ionized chromium lines were found for example in Alpha UMi (Polaris) and HR 7308, and in the spectrum of XX Oph 58 emission Cr II lines were observed. Consequently, data on the Stark broadening of Cr II lines are obviously of interest for the modelling and analysis of stellar spectra.

We have calculated, by using the semiclassical perturbation approach, Stark broadening parameters for Cr II spectral lines and used the obtained results to investigate the influence of Stark broadening effect in stellar atmosphere for these lines. From our investigation we can conclude that newly calculated Stark widths for a number of strong Cr II lines agree well with the scarce laboratory data and provide a good fit to the line profiles observed in Ap stars. New Stark parameters are particular important for the study of Cr stratification in Ap stars in 9000 - 10000 K temperature region, where this stratification may be obtained from the careful study of the line profiles of multiplet 3 Cr II lines only.

Short talk

**SPECTROSCOPIC STUDY OF PLASMA FLOW FROM
MAGNETOPLASMA COMPRESSOR OPERATED IN NITROGENE**

I. Dojčinović, M. Kuraica, B. Obradović, J. Purić

Faculty of Physics, University of Belgrade, P.O. Box 368, 11 000 Belgrade, Serbia

Center for Science and Technology Development,

Obilićev venac 26, 11 000 Belgrade, Serbia

Singly ionized nitrogen spectral line profiles emitted from magnetoplasma compressor operated in nitrogen, have been scanned and studied. Plasma flow velocities were determined using ultra high speed camera. The electron temperatures have been determined from the Boltzmann slope of the relative intensities of N II spectral lines. The electron densities have been determined from the Stark widths and shifts of several scanned N II spectral lines. Using an input energy up to 5 kJ the measured plasma flow velocity, electron density and temperature were found to be up to 35 km/s, $2 \cdot 10^{16} \text{ cm}^{-3}$ and 4 eV, respectively.