

Invited lecture

**STARK PARAMETERS REGULARITIES OF MULTIPLY CHARGED ION
SPECTRAL LINES ORIGINATING FROM THE SAME TRANSITION ARRAY**

J. Purić¹, M. Šćepanović², I. Dojčinović¹, M. Kuraica¹, B. Obradović¹

¹*Faculty of Physics, University of Belgrade, P.O. Box 368, 11 000 Belgrade, Serbia
Center for Science and Technology Development,
Obilicev venac 26, 11 000 Belgrade, Serbia*

²*Faculty of Sciences and Mathematics, University of Montenegro,
P.O. Box 211, 81 000 Podgorica, Montenegro*

Stark widths and shift regularities of the multiply charged ions spectral lines originating from the same transition array have been studied. The emphases are on the Stark widths and shift dependences on the upper level ionization potential and the rest core charge of the emitters. Stark parameters temperature dependences have been deduced from the found regularities. The found regularities can be used for Stark widths and shifts predictions for the lines of multiply ionized spectral lines where not existed so far. The accuracy of the obtained width and shift values are of the same order as the accuracies of the used data in the procedure of finding regularities

Invited lecture

**3D SPECTROSCOPY OF NUCLEAR AND
EXTRANUCLEAR REGIONS OF NEARBY AGN**

P. Rafanelli

*Dipartimento di Astronomia, Universita di Padova,
Vicolo dell'Osservatorio 2, 35122 Padova, Italy
e-mail: piraf@pd.astro.it*

3D spectroscopy, is a modern method of investigation in observational astronomy, since it provides simultaneously a spectrum, under the same atmospheric and instrumental conditions, for each spatial element of a two-dimensional field of view. This gives a clear advantage with respect to classical sequential spectroscopic techniques, as long slit scans or Fabry-Perot interferometry, when studying extended sources, like galactic and extragalactic gaseous nebulae or nearby and distant galaxies.

Therefore 3D spectroscopy is intrinsically suited for a large number of observing programs and different kinds of targets.

Among them, it is doubtless of great importance the study of Active Galactic Nuclei (AGN), and in particular of the nuclear and circumnuclear regions of nearby Seyfert

galaxies ($z < 0.1$). In fact, it is in this circumnuclear environment that we are likely to find the gas and dust which may serve as fuel for the active nucleus.

In close collaboration with the astronomers of the Special Astrophysical Observatory (SAO-RAS, Russia), we have carried out an observational campaign aimed to study in detail the nuclear and circumnuclear regions of about 30 nearby AGN, and therefore to strongly improve the statistical significance of the results about the features of these regions.

The analysis and interpretation of this large amount of data will have a significant impact not only on the general understanding of the AGN nature and properties, but also on the Unification Theories which justify the differences observed in Type 1 and Type 2 AGN with simple effects of orientation of AGN with respect to our line-of-sight.

Invited lecture

PULSATION TOMOGRAPHY OF ROAp STARS

M. Sachkov, T. Ryabchikova

*Institute of astronomy RAS
48 Pyatnitskaya str., 119017 Moscow Russia
e-mail: msachkov@inasan.ru*

We present recent results of the observational study of rapidly oscillating Ap (ROAp) stars. Spectacular progress in this field has been achieved by considering high time resolution spectroscopy in addition to the classical high-speed photometric measurements. Spectroscopic observations of roAp pulsations led to the discovery of a multitude of unexpected phenomena, generally pointing to an extreme vertical chemical nonuniformity of the atmospheres of magnetic CP stars. Detailed analysis of spectroscopic pulsational behaviour allows us to establish relationship between pulsations and vertical stratification of chemical elements.