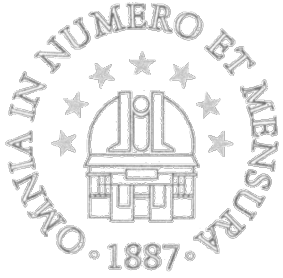
PROGRAMME AND ABSTRACTS:

VI Conference on Active Galactic Nuclei and Gravitational Lensing

June 02-06, 2024, Zlatibor Mt., Serbia

Editors: J. Kovačević Dojčinović
and V. A. Srećković



Belgrade, 2024

Scientific Organizing Committee

Jelena Kovačević Dojčinović (Astronomical Observatory, Belgrade, Serbia) - Co-chair
Vladimir A. Srećković (Institute of Physics Belgrade, Serbia) - Co-chair
Luka Č. Popović (Astronomical Observatory, Belgrade, Serbia)
Milan S. Dimitrijević (Astronomical Observatory, Belgrade, Serbia)
Edi Bon (Astronomical Observatory, Belgrade, Serbia)
Nataša Bon (Astronomical Observatory, Belgrade, Serbia)
Dragana Ilić (Faculty of Mathematics, University of Belgrade, Serbia)
Saša Simić (Faculty of Sciences, University of Kragujevac, Serbia)
Wolfram Kollatschny (Institute for Astrophysics, University of Goettingen, Germany)
Andjelka Kovačević (Faculty of Mathematics, University of Belgrade, Serbia)
Evangelia Lyratzi (University of Athens, Greece)
Paola Marziani, (INAF - Osservatorio Astronomico di Padova, Padova, Italia)
Evencio Mediavilla (Instituto de Astrofísica de Canarias, Spain)
Elena Shablovinskaya (Special Astrophysical Observatory, Russia)
Marko Stalevski (Astronomical Observatory, Belgrade, Serbia)
Jian-Min Wang, (Key Laboratory for Particle Astrophysics, Institute of High Energy Physics, China)
Alexander Zakharov (Institute for Theoretical and Experimental Physics, Moscow, Russia)

Local Organizing Committee

Jelena Kovačević Dojčinović (Astronomical Observatory, Belgrade, Serbia) - Chair
Aleksandra Kolarski (Institute of Physics Belgrade, University of Belgrade, Serbia) - Secretary
Filip Arnaut (Institute of Physics Belgrade, University of Belgrade, Serbia) - Member

Saša Simić (Faculty of Sciences, Department of Physics, University of Kragujevac) - Member

Impressum

Organized by: Astronomical Observatory Belgrade
Co-organizer: Institute of Physics Belgrade
Published by: Astronomical Observatory Belgrade, Volgina 7, 11060 Belgrade 38, Serbia
The publication of this issue is financially supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia.
Website: `http://servo.aob.rs/AGN_GL/index.html`
Cover image design: Saša Simić
Computer text design: Vladimir A. Srećković and Jelena Kovačević Dojčinović
ISBN 978-86-82296-07-2
Printed by: Skripta Internacional, Mike Alasa 54, Beograd
Number of copies: 50

Scope of the Conference

Investigation of the nature of the emitting ionized gas in active galactic nuclei (AGN) is one of important subjects in astrophysics today. Firstly, investigating the processes in the central region of these objects, we can learn about the innermost regions of other 'normal' galaxies. Secondly, AGN are the most powerful sources, located at different cosmological time- scales, and their research is cosmologically important. Finally, a part of emission from these objects (e.g. in the X-rays) has its origin very close to a supermassive black hole, and investigation of this emission can help us to understand the physical processes in a strong gravitational field.

Analysis of the AGN spectra, the shapes of the broad and narrow emission lines and their relative intensities, give us an insight in complex structure, kinematics and physics of the AGN emission regions, as well as in numerous atomic processes in the line emission gas. Collisional processes could be significant in some parts of the AGN broad line emission region where many atoms are in excited states, because of the high electron density and large optical depth. Moreover, it is demonstrated that the increasing of turbulence cause the grow of the number of continuum photons that can be absorbed, which increases the population of excited particles, as well as the importance of collisional processes since such particles may undergo a collisional transition.

On the other hand, a number of AGN are affected by gravitational lensing effect. Gravitational lensing is in general achromatic: the deflection angle of a light ray does not depend on its wavelength. However, the wavelength-dependent geometry of the various emission regions may result in a chromatic effect. Studies aimed at determining

the influence of microlensing on spectra of lensed quasars (hereafter QSOs) ought to account for the complex structure of the QSO central emitting region. Since the sizes of the QSO emitting regions are wavelength-dependent, microlensing by stars in a lens galaxy will lead to a wavelength-dependent magnification.

Venue
Zlatibor Mt., (Hotel Olimp – Zlatibor), Serbia

Contents

VI Conference on Active Galactic Nuclei and Gravitational Lensing ABSTRACTS

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24001

PECULIAR PROPERTIES OF Fe II LINES IN SPECTRA OF ACTIVE GALACTIC NUCLEI

Jelena Kovačević-Dojčinović[1], Ivan Dojčinović[2], and Luka Č. Popović[1,3]

[1]*Astronomical Observatory, Volgina 7, 11060 Belgrade, Serbia;*
[2]*Faculty of Physics, University of Belgrade,*
Studentski Trg 12, 11000 Belgrade, Serbia
[3]*Department of Astronomy, Faculty of Mathemetics,*
University of Belgrade, Studentski Trg 16, 11000 Belgrade, Serbia

E-mail: jkovacevic@aob.bg.ac.rs

One of the characteristics of Active Galactic Nuclei (AGN) Type 1 spectra are numerous Fe II lines, which can be very strong in some objects. The mechanisms of their excitation, atomic processes included in their emission, as well as their correlations with the other spectral parameters and the site of their emission in AGN structure, are open questions and represent the real challenge for research. Here we review the peculiar properties of the iron lines in AGN spectra and present two-component modeling of the iron lines. We assume that Fe II lines arise from the very broad line region (VBLR), the part of the BLR closer to the supermassive black hole and from the intermediate line region (ILR), which is part of the BLR farther away from the black hole. Using the set of synthetic spectra, we have shown that Fe II VBLR components could form the Fe II pseudocontinuum in the case of very strong and broad Fe II emission, and consequently affect

the measured spectral parameters in the optical spectra. We discuss possible physical explanations of the so-called Quasar Main Sequence, as implied by the results of the Fe II two-component modeling.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24002

INFLUENCE OF THE GAS OUTFLOW TO THE SPECTRAL CHARACTERISTICS OF AGNs TYPE 2

M. Lakićević, J. Kovačević-Dojčinović and L. Č. Popović

Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia

E-mail: mlakicevic@aob.bg.ac.rs, jkovacevic@aob.bg.ac.rs

We used a large sample of the Active Galactic Nuclei (AGN) Type 2 spectra, obtained from SDSS DR18 in order to investigate the influence of the gas outflow to their spectral characteristics. The sample is divided into two subgroups: one where significant outflow is observed in [O III] 4959, 5007 Å line profiles, and the other one where no outflow contribution is observed in [O III] lines. We explored and compared the spectral characteristics of these two subsamples using various spectral lines, with special focus to their kinematical properties.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24003

THE SUPERMASSIVE BLACK HOLES MERGING IN TICK-TOCK AGN (SDSS J1430+2303): PRO AND CONTRA

A. Moiseev[1,3], A. Marchuk[2] and I. Mereminskiy[3]

[1] *Special Astrophysical Observatory, Russian Academy of Sciences, Nizhny Arkhyz 369167, Russia*
[2] *Central (Pulkovo) Astronomical Observatory, Russian Academy of Sciences, Pulkovskoye chaussee 65/1, St. Petersburg 196140, Russia*
[3] *Space Research Institute of the Russian Academy of Sciences (IKI), Profsoyuznaya 84/32, 117997, Moscow, Russia*

E-mail: moisav@gmail.com

Since 2022, the galaxy SDSS J1430+2303 is considered as a potential candidate for supermassive black holes imminent merging thanks to its unusual light curve in the optical and X-ray ranges, as well as a significant change in Balmer lines shape in the comparison to the archive data. This report discusses the results of SDSS J1430+2303 new observations obtained at the 6-m telescope, Hubble Space telescope and Mikhail Pavlinsky ART-XC telescope on board the Spektr-RG space observatory. We consider arguments for and against the central black hole duality in SDSS J1430+2303.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24004

X-RAY-INDUCED CHANGES IN NEAR-EARTH PLASMA: A MACHINE LEARNING PERSPECTIVE

F. Arnaut, A. Kolarski and V. A. Srećković

Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia

E-mail: filip.arnaut@ipb.ac.rs, aleksandra.kolarski@ipb.ac.rs

We explored the feasibility of utilizing a multi-output machine learning algorithm to estimate ionospheric plasma parameters (sharpness and reflection height). The ionospheric plasma parameters are crucial for determining the properties of ionospheric plasma, such as electron density, rate coefficients, and cross sections for ionization/recombination processes. We examined the feasibility of employing two single-output algorithms, such as a combination of Random Forest (RF) and XGB, for the target variables. The findings revealed that during the in-sample testing phase, the multi-output model (XGB-XGB) consistently yielded the most favorable outcomes in terms of the RMSE. However, a close alternative was observed in the combination of RF and XGB models, where RF was employed for the sharpness parameter and the XGB algorithm was utilized for the reflection height parameter. During the out-of-sample validation, there was minimal variation observed among the four algorithm combinations. The most significant difference was observed between the RF-XGB and RF-RF combinations (7.6 percent decrease in RMSE).

The utilization of different algorithms and combinations of algorithms may yield marginal improvements, suggesting that the most significant improvement can be achieved through the expansion of the database.

Acknowledgments

The authors acknowledge the support from the Institute of Physics Belgrade which was made possible by grants from the Ministry of Science, Technological Development and Innovation of the Republic of Serbia.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24005

ESTIMATING THE BROAD LINE REGION SIZE OF QUADRUPLY LENSED QUASARS WITH MICROLENSING

Dj. Savić[1,2] and D. Hutsemékers[1] and D. Sluse[1]

[1] *Institut d'Astrophysique et de Géophysique, Université de Liège, Allée du 6 Août 19c, 4000 Liège, Belgique*
[2] *Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia*

E-mail: dsavic@uliege.be

Quadruply lensed quasars are powerful cosmic laboratories for simultaneously probing various astrophysical phenomena. Microlensing of the broad emission line region (BLR) in lensed quasars produces line profile distortions that can be used to probe the BLR size, geometry, and kinematics. Based on single and multi epoch spectroscopic data, we analyze the CIV line profiles for several lensed systems: Q2237+0305, J1004+4112, SDSSJ113803.73+031457.7 and SDSSJ133907.13+131039.6 and compare the microlensing induced line deformations with the simulated ones. The simulations are based on three representative BLR models: a Keplerian disk (KD), an equatorial wind (EW) and a polar wind (PW) of various sizes, inclinations and emissivities. The most likely models have been estimated using a Bayesian probabilistic approach. We find that the BLR radii estimated from microlensing follow the CIV radius-luminosity relation obtained from reverberation mapping, although the microlensing radii seem to be systematically smaller.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24006

PROBING THE SHALLOWING BLR RESPONSE TO OPTICAL CONTINUUM IN AGN

Edi Bon[1], S. Panda[2], N. Bon[1] and P. Marziani[3]

[1] *Astronomical Observatory, Volgina 7, 11060 Belgrade, Serbia;*
[2] *Laboratório Nacional de Astrofísica Rua dos Estados Unidos 154, Bairro das Nações. CEP 37504-364, Itajubá, MG, Brazil*
[3] *National Institute for Astrophysics (INAF), Padua Astronomical Observatory, Padua, Italy*

E-mail: ebon@aob.rs

Active galactic nuclei (AGN) can exhibit significant variability over time. In this study, we investigate the connection between optical continuum variability and the response of broad emission lines, aiming to probe the physical parameters of the broad-line region (BLR) plasma surrounding the supermassive black hole in AGN. Building upon previous research, we explore the relationship between optical continuum variability and the corresponding response of the Hβ emission line. Our goal is to elucidate the saturation effect of BLR luminosity with increasing AGN continuum, commonly referred to as the Pronik-Chuvaev effect. Employing a comprehensive, multi-component simultaneous spectral fitting approach across a range of spectral epochs, we generate continuum and Hβ light curves. Our observations reveal a clear trend of shallowing in the relationship between Hβ and continuum luminosities. To further investigate this trend, we conduct

CLOUDY photoionization simulations, integrating a suitable broadband spectral energy distribution. Exploring a wide parameter space, we model the Hβ emission from the BLR using a constant density, single-cloud model. Our analysis successfully replicates the observed shallowing of the Hβ emission relative to the rising AGN continuum, offering insights into the local BLR densities and the spatial distribution of the Hβ-emitting region.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24007

ELECTRON-MOLECULAR CATION COLLISIONS IN INTERSTELLAR SPACE

F. Iacob

West University of Timisoara, 300223 V. Parvan 4, Timisoara, Romania

E-mail: felix.iacob@e-uvt.ro

In the interstellar medium, highly excited states of molecules can form a state of matter called Rydberg Matter. Mainly, they are formed by the promotion of an electron from the lower layers of the molecule to the highly excited ones. However, these can also be formed by temporarily capturing an electron in high energy orbitals following its collisions with cations. This paper focuses on the latter, the collisional approach, which is more suitable for explaining these highly excited states that can be found in this environment. It should be mentioned that in this environment cations are abundant and the probability of collision with electrons is high generating with high rates these highly excited states of the neutral called Rydberg states. It is found that low-energy electrons, such as those in the interstellar medium, generate these neutral capture states much more frequently. These results provide a quantitative description of Rydberg matter, which by its properties is a good candidate for dark matter. As a case study the molecular cation NS^+ is considered as a target for obtaining strongly excited states of neutral NS after collisions with low energy electrons.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24008

PHYSICAL PROPERTIES OF LENSED QUASARS USING X-RAY TO MIR DATA

Kriti K. Gupta

University of Liége, Quartier Agora - Allée du six Août, 19c B-4000 Liège, Belgium

E-mail: kkg@uliege.be, kriti0706@gmail.com

AGN are powered by mass accretion and emit radiation over the entire electromagnetic spectrum. This multi-wavelength emission originates at different physical scales via different physical processes. Hence, a detailed analysis of the broadband spectral energy distributions (SEDs) of AGN can provide fundamental insights into their accretion physics and can be used to estimate important physical quantities, such as bolometric luminosities, black hole masses, and Eddington ratios. For gravitationally lensed quasars, we are usually missing this information which is crucial to understand the role of microlensing on the different emitting regions.

I will present an ongoing effort to derive this information for a sample of optically-selected quadruply-imaged quasars for which we have compiled photometric and spectroscopic data from the X-rays to mid-infrared from various ground- and space-based observatories, including HST, JWST, Chandra, LCO, Paranal, etc. Specifically, I constructed and fitted their multi-wavelength SEDs to estimate their bolometric luminosities and used Mg II λ2798 and/or C IV λ1549 line widths to calculate their black hole masses and Eddington ratios. A

preliminary overview of the physical properties of the population of lensed quasars and how they compare with non-lensed AGN will be presented. In addition, I will discuss how those estimates can be used to prioritize systems that require follow-up and for which microlensing can be used as a tool to study the accretion disk, broad-line region, and torus.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24009

DATA REDUCTION AND MODELLING OF DUST EMISSION IN THREE NEARBY ACTIVE GALACTIC NUCLEI

J. Faniyi, M. Stalevski, and J. Leftley

Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia
Université Côte d'Azur, Nice, France

E-mail: jfaniyi@uni-bremen.de, mstalevski@aob.rs, jleftley@oca.eu

The aim of this thesis is to process and model infrared spectro-photometric observations of three objects from the AGN sample in which the existence of dust in the polar region was established: ESO 323-G77, ESO 428-14, NGC 5506. Both archival and new, previously unpublished observations from the VLT telescope at the Paranal Observatory in Chile will be included. For modelling, the classic dust torus model will be used as well as a new model that includes dusty winds in the form of a hollow cone in the polar region. The publicly available code CIGALE will be used for fitting. As the main result, the parameters of the geometry and physical properties of the dust will be determined. This will be the first step towards characterising the dusty winds of a larger sample of AGNs, with the aim of establishing the conditions under which they arise and how they affect the galaxies in which they are located.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24010

MONITORING SOLAR FLARES AND GAMMA RAY BURSTS: MULTI-INSTRUMENTAL APPROACH INVESTIGATION

Aleksandra Kolarski, Aleksandra Nina, Vladimir A. Srećković, Filip Arnaut

Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia

E-mail: aleksandra.kolarski@ipb.ac.rs, vlada@ipb.ac.rs, arnaut@ipb.ac.rs

In this paper ionospheric phenomena were studied by utilization of VLF (Very Low Frequency radio signals, 3-30 kHz) technology for monitoring of lower ionospheric plasma response to driving agents originating both within our solar system, e.g. on Sun like solar flare (SF) events, and beyond our solar system, e.g. like gamma ray bursts (GRBs), with time span that encompasses period of several years. The data on X-ray fluxes measured by Geostationary Operational Environmental Satellites (GOES) were taken from NOAA National Centers for Environmental Information database, while data on GRBs were taken from Swift satellite database. VLF signal amplitude and phase data were monitored along multiple radio signal paths using network of VLF transmitters globally positioned worldwide and received in Belgrade, Serbia by BEL receiving system, covering mainly European subcontinent. Short-termed ionospheric perturbation associated with GRBs and relatively longer-lasting ionospheric perturbations associated with

SFs were compared in order to study similarities and differences in ionospheric plasma responses to these fundamentally different driving mechanisms.

Acknowledgments

The authors acknowledge the support from the Institute of Physics Belgrade which was made possible by grants from the Ministry of Science, Technological Development and Innovation of the Republic of Serbia.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24011

ELECTRON IONIZATION CROSS SECTIONS FOR IRON IONS - REPRESENTATION IN DATA BASES

B. P. Marinković and S. Đ. Ivanović

Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia

E-mail: bratislav.marinkovic@ipb.ac.rs, stefan.ivanovic992@gmail.com

Chemical abundances in active galaxies has been recently studied by Flury and Moran (2020). The Seyfert 2 galaxy NGC 6552 shows a reflected X-ray spectrum with strong Kα lines of many neutral atoms from O, Ne, Mg till Fe and Ni (Reynolds et al. 1994). Since iron is the most abundant of the heavier elements in the Universe, the study of its Kα profiles is a powerful tool for investigating the innermost regions of AGN. These profiles show characteristic double-horn structure influenced by gravitational and Doppler effects (Middei, 2018). The formation of the H-like iron (Fe XXVI) Lyα line at 6.97 keV in the framework of current models for accretion into a black hole have been studied by Bautista and Titarchuk (1999).

Iron Project (Hummer et al. 1993) has provided a vast amount of computed data on electron excitation cross sections and rates of astrophysical importance, together with radiative transition probabilities and photoionization cross sections mainly for ions of the iron-group elements. Within the scope of that project electron excitation of the

fine-structure transitions in hydrogen-like ions He II and Fe XXVI had been determined (Kisielius et al. 1996). Experimental electron-impact ionization cross sections have been obtained by measuring the equilibrium ionization balance from X-ray measurements of radiative recombination into the K-shell of hydrogen-like and bare iron ions within an electron beam ion trap (O'Rourke et al. 2001). Existing electron-impact ionization cross sections have been reviewed recently by Kynienė et al. (2019) together with the presentation of the new set of data for Fe IX ion. Some of these cross sections may be found in BEAM data base (Marinković et al. 2017) as well as in several other AMO data bases what will be discussed during the presentation.

References

Bautista, M. A. and Titarchuk, L. 1999, *Astrophys. J.* , 511, 105

Flury, S. R. and Moran, E. C. 2020, *Mon. Not. R. astr. Soc.* , 496, 2191

Hummer, D. G.; Berrington, K. A.; Eissner, W.; Pradhan, A. K.; Saraph, H. E. and Tully, J. A. 1993, *Astron. Astrophys.* , 279, 298

Kisielius, R.; Berrington, K. A. and Norrington, P. H. 1996, *Astron. Astrophys. Suppl.* , 118, 157

Kynienė A., Kučas S., Masys Š., Jonauskas V. 2019, *Astron. Astrophys.* , 624, A14

Marinković, B. P.; Jevremović, D.; Srećković, V. A.; Vujčić, V.; Ignjatović, L. M.; Dimitrijević, M. S. and Mason, N. J. 2017, *Eur. Phys. J. D* , 71, 158

Middei, R. 2018, PhD Thesis *The X-ray emission of AGN: investigating the surroundings of Black Holes*, Univ. Roma Tre

O'Rourke, B.; Currell, F. J.; Kuramoto, H.; Li, Y. M.; Ohtani, S.; Tong, X. M. and Watanabe, H. 2001, *Journal Of Physics B* , 34, 4003

Reynolds, C. S.; Fabian, A. C.; Makishima, K.; Fukazawa, Y. and Tamura, T. 1994, *Mon. Not. R. astr. Soc.* , 268, L55

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24012

THE DISK PLUS (FAILED) WIND SYSTEM OF 3C 47: A STORY OF ACCRETION DISKS AND BINARY BLACK HOLES

Paola Marziani[1], S. Terefe Mengistue[2], A. del Olmo[3], J. Perea[3], A. Deconto-Machado[3], M. Pović[4], E. Bon[5] and N. Bon[5]

[1] *National Institute for Astrophysics (INAF), Padua Astronomical Observatory, Padua, Italy*
[2] *Space Science and Geospatial Institute (SSGI), Addis Ababa, Ethiopia*
Addis Ababa University (AAU), Addis Ababa, Ethiopia
Jimma University, Jimma, Ethiopia
[3] *Instituto de Astrofísica de Andalucía (IAA-CSIC), Granada, Spain*
[4] *Space Science and Geospatial Institute (SSGI), Addis Ababa, Ethiopia*
[5] *Astronomical Observatory, Belgrade, Serbia*

E-mail: paola.marziani@inaf.it

Optically thick, geometrically thin accretion disks (ADs) around supermassive black holes are thought to contribute to broad-line emission in type-1 active galactic nuclei (AGN). However, observed emission line profiles most often deviate from those expected from a rotating disk, and the role of ADs in contributing to broad Balmer lines and high-ionization UV lines such as CIVλ1549 in radio-loud (RL or "jetted") AGN remains unclear. We first quantified the low-ionization broad emission line properties of jetted quasars in the main sequence context. We confirm that broad emission lines show large redward

asymmetry both in Hβ and Mg IIλ2800, and an unbiased comparison matching black hole mass and Eddington ratio suggests that the most powerful RL quasars show the highest redward asymmetries in Hβ in the general population of AGN. These shifts can be accounted for gravitational and transverse redshift effects, especially for black hole masses larger than $M_{\rm BH} \approx 10^{8.7}$ M$_\odot$. The analysis of the extremely jetted quasar 3C 47 added another piece to the puzzle: not only are the low ionization profiles of 3C 47 well-described by a relativistic Keplerian AD model, with disk emission between ≈ 100 and ≈ 1000 gravitational radii, but also the high-ionization line profiles can be understood as a combination of disk plus a failed wind contribution that is in turn hiding the disk emission. Constraints on radio properties and line profile variability suggest that the scenario of 3C 47 might involve the presence of a second black hole with secondary-to-primary mass ratio $\sim 0.5-1$. We conjecture that the double peakers — type-1 AGN with Balmer line profiles consistent with AD emission — might have their emission truncated by the sweeping effect of a second black hole, and we analyze the implications for the general AGN population.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24013

ENSEMBLE POWER SPECTRAL DENSITY OF QUASARS IN UV/OPTICAL BANDS

V. Petrecca, I. E. Papadakis, M. Paolillo, D. De Cicco and F. E. Bauer

Università di Napoli "Federico II", via Cinthia 9, 80126 Napoli, Italy

E-mail: vincenzo.petrecca@unina.it

Variability of AGN has proven to be a powerful tool to constrain the properties of the accretion process onto supermassive black holes and their surroundings. Correlations between UV/optical variability and physical properties have been long studied with a plethora of different approaches and time-domain surveys, although the detailed interplay between different emitting regions is not yet clear. Upcoming surveys such as the Legacy Survey of Space and Time (LSST) will revolutionize time domain astronomy by increasing both the size of the sample and the temporal baseline.

I present a completely model independent study of quasar optical variability through ensemble power spectral density (PSD) of archival data collected from different surveys and reaching LSST-like temporal coverage. Variability does not depend on redshift, while both PSD amplitude and slope depend on black hole mass, accretion rate and rest-frame wavelength. There is also evidence for a universal PSD shape for all quasars, where frequencies scale with black hole mass while normalization and slopes are fixed, at any given wavelength and accretion rate. The proposed framework can show the potential LSST

capabilities and can be applied to the upcoming data, shedding light on the accretion mechanism of AGN.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24014

REACTIVE COLLISIONS BETWEEN ELECTONS AND MOLECULAR IONS-ESSENTIAL ELEMENTARY PROCESSES IN THE INTERSTELLAR MEDIA

N. Pop[1], E. Djuissi[2], R. Hassaine[2], J. Zs. Mezei[3], F. Iacob[4] and I. F. Schneider[2,5]

[1] *Dept. of Fundamental Physics for Engineers, Politehnica University, Timisoara, 300006, Romania*
[2] *Laboratoire Ondes et Milieux Complexes, CNRS, Univ. Le Havre Normandie, Le Havre, 76058, France*
[3] *Inst. of Nuclear Research of the Hungarian Academy of Sciences, Debrecen, H-4001, Hungary*
[4] *Physics Faculty, West University of Timișoara, Timișoara, 300223, Romania*
[5] *Laboratoire Aimé Cotton, CNRS, ENS Cachan and Univ. Paris-Sud, Orsay, 91405, France*

E-mail: nicolina.pop@upt.ro

We describe the major low-energy electron-impact processes involving H_2^+ and HD^+, relevant for the early universe astrochemistry: dissociative recombination, inelastic and superelastic scattering. The Multichannel Quantum Defect Theory (MQDT) has been employed in computing cross sections and Maxwell rate coefficients for electron-driven reactions involving molecular cations. A new series of computations has been performed to obtain cross sections and rate coefficients

for state-to-state ro-vibrational transitions on the H_2^+ and HD^+ ion, induced in collisions with low-energy electrons. We report cross sections and Maxwellian rate coefficients for both rotational and vibrational transitions, from the lowest 30 ro-vibrational levels and outline several important features, like rotational and resonant effects.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24015

UPGRADING QNPY: MODELLING QUASAR LIGHT CURVES IN LARGE SURVEYS

Aman Raju[1], Andjelka Kovačević[1], Marina Pavlović[2], Dragana Ilić[1], Iva Čvorović-Hajdinjak[1], Luka Č. Popović[3]

[1] *Faculty of Mathematics, University of Belgrade, Stidentski Trg 16, 11000 Belgrade, Serbia*
[2] *Mathematical Institute of the Serbian Academy of Sciences and Arts, Kneza Mihaila 36, 11000 Belgrade, Serbia*
[3] *Astronomical Observatory in Belgrade, Volgina 7, 11000 Belgrade, Serbia*

E-mail: amannadimpalli.raju@students.uniroma2.eu

We build on the LSST-SER-SAG- S1 team's QNPy (modeling Quasar time series with Neural processes in Python) by integrating Self- Organizing Maps (SOMs) and Attentive Latent Neural Processes to offer a computationally efficient and reliable package to model quasar variability. Harnessing the power of SOMs for clustering and Attentive Latent Neural Processes for features sampled from within the latent space, we present the pilot results of our analysis on several large surveys from the Optical and X-ray bands including the LSST AGN Data Challenge, Gaia, ZTF, and Swift Surveys.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24016

SELECTING HIGH-Z QSOs WITH MACHINE LEARNING

I. Saccheo

University of Roma 3, Via della Vasca Navale, Rome, Italy

E-mail: ivano.saccheo@inaf.it

The upcoming surveys from both Rubin/LSST and Euclid will uncover millions of previously unknown AGN. However, due to the massive amount of data collected each night, it is essential to develop reliable tools that can efficiently identify quasars among billions of stars and inactive galaxies. I will discuss the results of different machine-learning based selection algorithms, including probabilistic random forests, gradient boosting, convolutional neural networks (CNN) and AutoEncoders (AE). These algorithms were applied both to real (SDSS, PANSTARRS) and mock catalogs exploiting photometry, images and light curves. I will specifically focus on the selection of luminous and high-redshift ($z > 2.5$) QSOs. Given the low space density of these sources, it is critical to have a selection rate as complete as possible, to better constrain the high-z luminosity function and, in the case of the even rarer $z>6$ QSOs, to estimate their contribution to reionization. I will highlight how, thanks to ML algorithms we can make use of all the available information and outperform traditional selection criteria based on cuts in the color-color diagram and discuss how the number of available features affects the accuracy of the results.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24017

THE COMAPRISON OF Hα AND Hβ EMISSION LINES AS INDICATORS OF SUPERMASSIVE BLACK HOLE MASS IN THE SAMPLE OF AGNs TYPE 1

S. Marčeta-Mandić[1], J. Kovačević-Dojčinović[1] and L. Č. Popović[1,2]

[1]*Astronomical Observatory, Volgina 7, 11060 Belgrade, Serbia*
[2]*Department of Astronomy, Faculty of Mathematics, Univeristy of Belgrade, Studentski Trg 16, 11000 Belgrade, Serbia*

E-mail: sladjana@aob.bg.ac.rs, jkovacevic@aob.bg.ac.rs

Active galactic nuclei (AGN) is a compact region in an active galaxy, with significant luminosity excess attributed to gas accretion into the AGN's central supermassive black hole (SMBH). In this work we aimed to compare the broad Hα and Hβ emission lines as indicators of SMBH mass. For this purpose, we used the sample of Type 1 AGN taken from the Sloan Digital Sky Survey, for which stellar velocity dispersions are available in literature. We compared SMBH masses estimated using the kinematical parameters of each of these two broad emission lines with the stellar velocity dispersions. We found that correlations between these parameters increase for spectra with certain spectral properties, indicating that for these spectra Hα and Hβ are more reliable as SMBH mass indicators.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24018

THE IMPORTANCE OF SOME COLLISIONAL IONIZATION AND RECOMBINATION PROCESSES IN AGNs

Vladimir A. Srećković[1], Ljubinko M. Ignjatović[1], Milan S. Dimitrijević[2] and Magdalena D. Christova[3]

[1]*Institute of Physics Belgrade, Pregrevica 118, 11080, Belgrade, Serbia*
[2]*Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia*
[3]*Department of Applied Physics, Technical University of Sofia, 1000 Sofia, Bulgaria*

E-mail: vlada@ipb.ac.rs, mdimitrijevic@aob.rs

The study of the influence of numerous atomic and molecular processes may be of importance for diagnostic methods required to obtain physical conditions in the broadline region (BLR) of active galactic nuclei (Dimitrijević et al 2021, Srećković et al. 2020). Collisional ionization processes in atom-Rydberg atom collisions, along with the associated recombination processes, have been studied and reported among several collisional reactions. In moderately ionized plasma layers, these processes have an impact on ionization and the populations of hydrogen excited atoms. From the results it follows that the investigation of these processes is of interest for the research and modelling of such a medium.

Acknowledgments

The article is based upon work from COST Action CA21136 CosmoVerse Addressing observational tensions in cosmology with systematics and fundamental physics. Authors thank N. Pop for fruitful discussions.

References

Dimitrijević, M. S., Srećković, V. A., Ignjatović, L. M., & Marinković, B. P. (2021). The role of some collisional processes in AGNs: Rate coefficients needed for modeling. New Astronomy, 84, 101529.

Srećković, Ignjatović, L. M., & Dimitrijević, M. S. (2020). Photodestruction of diatomic molecular ions: Laboratory and astrophysical application. Molecules, 26(1), 151.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24019

NEW MOLECULAR DATA FOR ASTROCHEMICAL MODELLING

Vladimir A. Srećković[1], Aleksandra Kolarski[1], Filip Arnaut[1], Milan S. Dimitrijević[2] and Magdalena D. Christova[3] and Nikolai N. Bezuglov[4]

[1]*Institute of Physics Belgrade, Pregrevica 118, 11080, Belgrade, Serbia*
[2]*Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia*
[3]*Department of Applied Physics, Technical University of Sofia, 1000 Sofia, Bulgaria*
[4] *Saint Petersburg State University, 7/9 Universitetskaya nab., St. Petersburg, Russia 199034*

E-mail: vlada@ipb.ac.rs, mdimitrijevic@aob.rs

Atomic and molecular (A&M) data and databases, which contain information about species, their identities, and processes, are critical and useful tools used in many fields of astrophysics, chemistry, and astro-informatics. Moreover methods of computational astrochemistry have become increasingly important in the last decades for the investigation of interaction and dynamics of small molecules enclosed in larger structures (Albert et al 2020, Srećković et al. 2020). In this contribution the role of some A&M processes has been studied.

Acknowledgments

The article is based upon work from COST Action CA21101, Confined molecular systems: from a new generation of materials to the

stars (COSY) and Science Fund of the Republic Serbia [Grant no. 3108/2021, NOVA2LIBS4fusion]. Authors thank N. Pop for fruitful discussions.

References

Albert, Damien, et al. (2020). A decade with VAMDC: Results and ambitions. Atoms 8.4, 76.

Srećković, Ignjatović, L. M., & Dimitrijević, M. S. (2020). Photodestruction of diatomic molecular ions: Laboratory and astrophysical application. Molecules, 26(1), 151.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24020

THE EXTREMES OF AGN VARIABILITY: OUTBURSTS, DEEP FADES, CHANGING-LOOKS, AND EXCEPTIONAL SPECTRAL STATES

S. Komossa

Max-Planck Institut fuer Radioastronomie, Auf dem Huegel 69, 53121 Bonn, Germany

E-mail: skomossa@mpifr.de, astrokomossa@gmx.de

We review results from ongoing monitoring campaigns (in the optical, UV, X-rays and radio) on some of the most highly variable AGN known, and the identification of new AGN in extreme flux or spectral states, including some of the highest-amplitude outbursts observed to date, deep low-states, unexpected long-term trends, and systems which exhibit extreme Seyfert-type transitions ("changing-look AGN"). Long-term lightcurves, densely covered for multiple years, and follow-up spectroscopy in different spectral bands are used to shed light on the underlying variability mechanisms including accretion disk and broad-line region physics. Remarkable differences are seen, for instance, in the optical spectral response to extreme outbursts, implying very different intrinsic variability mechanisms. If time allows, I will also review most recent results from multi-year projects to test binary supermassive black hole models of the highly variable blazar OJ 287.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24021

PARTICIPATION OF SERBIAN RESEARCHERS IN COST ACTIVITIES AND AN OVERVIEW OF COST PROCEDURES AND NATIONAL RULES FOR JOINING RECENTLY APPROVED COST ACTIONS

Zoran R. Mijić, Bratislav P. Marinković

Institute of Physics Belgrade, Pregrevica 118,
11080, Belgrade, Serbia

E-mail: zoran.mijic@ipb.ac.rs, bratislav.marinkovic@ipb.ac.rs

To strengthen Europe's ability to address scientific, technical, and social issues, COST (European Cooperation in Science and Technology) connects academics and innovators by funding excellence-driven and multidisciplinary pan-European networks - COST Actions. Over the last 50 years it has become one of the best mechanisms to promote science cooperation in the world having significant impact on young researcher carriers. In this paper the project evaluation procedure in the COST research framework (Seeber et al. 2022) will be discussed focusing on the degree of interdisciplinarity of Actions proposals - whether it can be advantage or not. In addition, a comprehensive statistical analysis of Serbian representatives participating in active COST actions will be presented (Mijic et al. 2022). Furthermore, the effects of participating in a COST Action on the level of scientific production of researchers from inclusive target countries as well as young researcher is discussed. Participation in COST activities has become progressively more competitive and researcher from

Serbia are involved in almost 97% of active Actions. In order to provide efficient joining COST Actions information on new national rules and procedures required will be presented together with overview of recently approved Actions expected to start in September 2024.

Acknowledgments

Thanks are due to The Ministry of Science, Technological Development and Innovation of the Republic of Serbia and the Institute of Physics Belgrade for national COST office support.

References

Mijić, Z., Marinković, B., (2022), Statistics of Management Committee Members from Serbia in COST Actions,IV Meeting on Astrophysical Spectroscopy - A&M DATA - Atmosphere, Book of Abstracts and Contributed Papers, Eds: V. A. Srećković, M. S. Dimitrijević, N. Veselinović and N. Cvetanović, pp.74-80.

Seeber, M., Vlegels, J., Cattaneo, M., (2022), Conditions that do or do not disadvantage interdisciplinary research proposals in project evaluation, The Journal of the Association for Information Science and Technology, 73, 1106 73, 1106.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24022

ELECTRON-IMPACT PROCESSES AND MOLECULAR IONS OF ASTROPHYSICAL IMPORTANCE

Sanja Tošić[1], Vladimir A. Srećković[1] and Veljko Vujčić[2]

[1]*Institute of Physics Belgrade, Pregrevica 118, 11080, Belgrade, Serbia*
[2]*Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia*

E-mail: seka@ipb.ac.rs, vlada@ipb.ac.rs

Electron-impact processes involving molecular ions provides valuable insights into the chemical complexity and dynamics of astrophysical environments. These processes are particularly important in understanding the chemistry and dynamics of astrophysical environments such as interstellar clouds and planetary atmospheres (Dimitrijević et al. 2021, Srećković et al. 2020). Understanding electron-impact processes in astrophysics requires a combination of theoretical modeling, laboratory experiments, and observational data (Albert et al. 2020). Here we report the new data for electron-impact processes involving some small molecular ions (potassium, sodium, lithium and hydrogen molecular cations). Data includes rate coefficients for electron-impact processes in domains of higher principal quantum numbers and temperatures up to 10 000 K.

Acknowledgments

This research was supported by the Science Fund of the Republic Serbia [Grant no. 3108/2021, NOVA2LIBS4fusion and Grant No. 7749560, EGWIn]

References

Albert D. et al. (2020). A decade with VAMDC: Results and ambitions, Atoms 8.4, 76.

Dimitrijević, M. S., Srećković, V. A., Ignjatović, L. M., & Marinković, B. P. (2021). The role of some collisional processes in AGNs: Rate coefficients needed for modeling. New Astronomy, 84, 101529.

Srećković, Ignjatović, L. M., & Dimitrijević, M. S. (2020). Photodestruction of diatomic molecular ions: Laboratory and astrophysical application. Molecules, 26(1), 151.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24023

NEW DATASET FOR MOLECULAR IONS OF ASTROPHYSICAL IMPORTANCE

Veljko Vujčić [1], Vladimir A. Srećković[2], Radoslav Zamanov[3] and Darko Jevremović[1]

[1] *Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia*
[2] *Institute of Physics Belgrade, Pregrevica 118, 11080, Belgrade, Serbia*
[3] *Institute of Astronomy, Bulgarian Academy of Sciences, 72 Tsarigradsko Chaussee Blvd., 1784 Sofia, Bulgaria*

E-mail: veljko@aob.rs, vlada@ipb.ac.rs

Atomic and molecular (A&M) datasets, databases and data ecosystems are gaining increasing importance for diagnostics, creation of models and simulations of complex physical processes, and interpretation of data provided by measurements (Marinkovic et al., 2017). A&M data can be used to model and comprehend stellar processes, including nucleosynthesis, radiation, and the formation of complex molecules in space, and also in the interstellar medium (Snow, T. P. & McCall, B. J. (2006)). Precision spectroscopy of molecular ions has applications in astrochemistry, quantum state controlled chemical reactions, and measurements of fundamental constants (Vazquez-Carson et al., 2022; Brown et al., 2016). Such accurate spectroscopy measurements open the path for search for astrophysical presence of small molecules like SiH+, CaH+, etc. We investigated optical (photodissociative) processes involving calcium monohydride ions, and collected

cross section dataset for the range of parameters which cover modeling of abovementioned environments.

Acknowledgments

The article is partially based upon work conducted during STSM funded by COST Action CA18212 Molecular Dynamics in the GAS phase (MD-GAS).

References

Brown, K. R., Khanyile, N. B., Rugango, R., Shu, G., & Calvin, A., Single Molecular Ion Spectroscopy: Towards Precision Measurements on CaH+. 2016, in 71st International Symposium on Molecular Spectroscopy, TD09.

Marinkovic, B. P., Bredehoft, J., Vujčić, V., Jevremović, D., & Mason, N., Rosetta Mission: Electron Scattering Cross Sections-Data Needs and Coverage in BEAMDB Database. 2017, Atoms,5, 46

Snow, T. P., & McCall, B. J. (2006). Diffuse atomic and molecular clouds. Annu. Rev. Astron. Astrophys., 44, 367-414.

Vazquez-Carson, S. F., Sun, Q., Dai, J., Mitra, D., & Zelevinsky, T., Direct laser cooling of calcium monohydride molecules. 2022, New J. Phys., 24, 083006, DOI:10.1088/1367-2630/ac806c

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24024

DETECTION OF THE SUPERMASSIVE BINARY BLACK HOLE CANDIDATES USING SPECTRAL PROPERTIES

A. Deandra[1,2], L. Č Popović[3], F. Tombesi[2]

[1] *Faculty of Mathematics, University of Belgrade, Stidentski Trg 16, 11000 Belgrade, Serbia*
[2] *Physics Department, Tor Vergata University of Rome, Via della Ricerca Scientifica 1, 00133 Rome, Italy*
[3] *Astronomical Observatory in Belgrade, Volgina 7, 11000 Belgrade, Serbia*

E-mail: aurellio.deandra@students.uniroma2.eu, lpopovic@aob.rs, francesco.tombesi@roma2.infn.it

The merging of supermassive binary black hole (SMBBH) helps in the understanding of galaxy formation and evolution, as well as the source of low-frequency gravitational waves. Unlike kiloparsec SMBBH, sub-parsec SMBBH is difficult to observe directly. However, the activity produced by the sub-parsec SMBBH system is similar to activity observed in active galactic nuclei (AGN) and therefore, similar method of AGN search can be done to search for SMBBH. In this research, the SMBBH search is done using spectral analysis. Prior search with PCA method by Eracleous, et al. (2012) using SDSS DR7 spectra data centered around H-beta region revealed around 100 SMBBH candidates. This prior search is updated to reflect the improvement of SDSS instrument and the new SDSS DR16 catalogue. The candidates

list of SMBBH is further refined using simulation that based on model by Popović, et al. (2021). The simulation generates light curves and broad lines that can be compared with the observed profile in optical and x-ray wavelength.

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24025

UNVEILING GAMMA-RAY-EMITTING FR0 RADIO GALAXIES

Meghana Pannikkote[1,2], Vaidehi S. Paliya[3], and D.J. Saikia[3]

[1]*Faculty of Mathematics, University of Belgrade, Studentski Trg 16, 11000 Belgrade, Serbia*
[2]*Physics Department, University of Rome Tor Vergata, Via della Ricerca Scientifica 1, 00133 Rome, Italy*
[3]*Inter-University Centre for Astronomy and Astrophysics (IUCAA), SPPU Campus, Pune 411007, India*

E-mail: meghana.pannikkote@students.uniroma2.eu

Fanaroff-Riley type 0 (FR0) radio galaxies are the latest entry in the jetted active galactic nuclei family. They are characterized by their compact radio morphology and similarities to host galaxy properties of FR I sources. We have recently identified, for the first time, seven gamma-ray emitting FR0s by leveraging the high-resolution radio and optical spectroscopic datasets provided by the ongoing wide-field sky surveys, e.g., the Very Large Array Sky Survey. The subsequent analysis of the multi-wavelength observations reveals the gamma rays to be produced by misaligned jets similar to more common FR I and II radio galaxies. While parsec-scale radio structures vary among FR0s, gamma-ray-detected ones often showcase dominant core emission with core-jet configurations. Further details of the findings will be presented.

Unified Astronomy Thesaurus concepts: Fanaroff-Riley radio galaxies (526); BL Lac- ertae objects (158); Relativistic jets (1390); Gamma-ray sources (633)

VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24026

Tidal disruption events in AGNs in the context of LSST

D. Ilić

Department of Astronomy, University of Belgrade - Faculty of Mathematics, Studentski trg 16, 11000 Belgrade, Serbia
E-mail: dragana.ilic@matf.bg.ac.rs

One type of nuclear transients in galaxies during which a star is being partially or completely destructed by the supermassive black hole (SMBH), so-called Tidal Disruption Events (TDEs), may also happen in active galactic nuclei (AGNs). These events are one possible scenario proposed to be behind the extreme variability of AGNs and changing-look transitions, offering possible clues to the triggering of activity in AGNs. Here I will present some our investigations of TDEs in AGNs, and discuss perspectives of the studies of TDEs in AGNs in the next biggest time-domaine survey: the Rubin Observatory "Legacy Survey of Space and Time" (LSST).

Authors' Index

Programme

Sunday, June 2

12:00 - Departure from Belgrade

16:00 - Arrival to Zaltibor

17:30 - 18:00 - Registration

Chairmans: V. A. Srećković, J. Kovačević Dojčinović

18:00 - 18:15 - Opening ceremony

18:15 - 18:45 - Milan S. Dimitrijević and Luka Č Popović - A brief history of the AGN GL meetings

19:00 - 21:00 - Welcome cocktail

Monday, June 3

Chairperson: L. Č. Popović

10:00 - 10:30 - Stefanie Komossa - The extremes of AGN variability: outbursts, deep fades, changing-looks, and exceptional spectral states

10:30 - 11:00 - J. Kovačević Dojčinović - Peculiar properties of Fe II lines in spectra of active galactic nuclei

11:00 - 11:30 - Coffee break

Chairperson: M.S. Dimitrijević

11:30 - 12:00 - Nicolina Pop - Reactive collisions between electrons and molecular ions-essential elementary processes in the interstellar media

12:00 - 12:30 - Vincenzo Petrecca - Ensemble power spectral density of quasars in UV/optical bands

13:00 - 15:00 - Lunch break

15:00 - 18:00 - Work on mini-projects

Tuesday, June 4

Chairperson: A. Kovačević

10:00 - 10:30 - Paola Marziani - The disk plus (failed) wind system of 3C 47: a story of accretion disks and binary black holes

10:30 - 11:00 - Edi Bon - Probing the shallowing BLR response to optical continuum in AGN

11:00 - 11:30 - Coffee break

11:30 - 12:00 - Felix Iacob - Electron-molecular cation collisions in interstellar space

12:00 - 12:15 - Zoran Mijić and Bratislav Marinković - COST activities and an overview of cost procedures and national rules for joining recently approved actions

12:15 - 14:00 - Lunch break

14:00 - 18:00 - Excursion

Wednesday, June 5

Chairperson: S. Komossa

10:00 - 10:30 - Djordje Savić - Estimating the broad line region size of quadruply lensed quasars with microlensing

10:30 - 11:00 - Kriti Kamal Gupta-Physical properties of lensed quasars using X-ray to MIR data

11:00 - 11:30 - Coffee break

Chairperson: D. Ilić

11:30 - 12:00 - Ivano Saccheo-Selecting high-Z QSOs with machine learning

12:00 - 13:00 - Oral poster presentations (5-10 min for each poster)

13:00 - 15:00 - Lunch break

15:00 - 18:00 - Work on mini-projects

20:00 - Conference diner

Thursday, June 6

Chairperson: E. Bon

10:00 - 10:30 - Dragana Ilić -Tidal Disruption Events in AGNs in the context of LSST

10:30 - 10:40 - Closing ceremony

12:00 - 14:00 - Lunch break

14:00 - Departure for Belgrade