



28th Young Scientists' Conference on Astronomy and Space Physics  
October 24–28, 2022  
Kyiv, Ukraine

## PROGRAMME

Time Zone: UTC+0

# Monday, October 24

Time Zone: UTC+0

[10.30-11.00] - Official opening

## Section ‘Extragalactic astrophysics and cosmology’

Chair: Iryna Chemerynska, Olena Torbaniuk

- 11.00-11.45** Prof. Wojciech Hellwing (*Center for Theoretical Physics of PAS, Warsaw, Poland*) *In a quest to understand cosmic acceleration: testing gravity and beyond* (**invited, 40+5**)
- 11.45-12.00** Suhani Gupta, W. Hellwing, M. Bilicki (*Center for Theoretical Physics of PAS, Warsaw, Poland*) *Imprints of modified gravity on non-linear structure formation* (**12+3**)
- 12.00-12.15** Dr. Olga Avsajanishvili, Y. Huang, L. Samushia, T. Kahniashvili (*E.Kharadze Georgian National Astrophysical Observatory, Tbilisi, Georgia*) *Reconstruction and analysis of cosmological scalar field  $\varphi$ CDM models* (**12+3**)
- 12.15-12.30** Olexandr Gugnin, V. Tugay, L. Zadorozhna (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) *Predicting large scale structure of the Universe using deep learning methods* (**12+3**)
- 12.30-12.45** Sergey Skolota, E. Bannikova (*Institute of Astronomy of V.N. Karazin Kharkiv National University, Kharkiv, Ukraine*) *New approximate expressions for the outer gravitational potential of a torus with an elliptical cross-section* (**12+3**)
- 12.45-13.00** Magdalena Krupa, P. Agnieszka, B. Maciej (*Astronomical Observatory of the Jagiellonian University, Kraków, Poland*) *The choice of the Zone of Avoidance compensation method to estimate clustering dipole in galaxy catalogs* (**12+3**)
- 13.00-13.05** Iryna Chemerynska, H. Atek (*Institut d’Astrophysique de Paris, Paris, France*) *Early star-forming galaxies through Gravitational telescopes* (**poster, 5**)
- 13.05-13.40** **coffee-break**
- 13.40-13.55** Subhrata Dey, A. Goyal, K. Małek, T. Galvin, N. Seymour, T. Santos, J. Piotrowska, V. Charmandaris (*Astronomical Observatory of the Jagiellonian University, Kraków, Poland*) *Low frequency radio continuum imaging and SED modeling of 11 local luminous infrared galaxies in radio and infrared domains* (**12+3**)
- 13.55-14.10** Marcos Muñiz Cueli, L. Bonavera, J. González-Nuevo, D. Crespo, J. Casas, A. Lapi (*Facultad de Ciencias de la Universidad de Oviedo, Oviedo, Spain*) *Tomography-based observational determination of the abundance of dark matter halos using the submillimeter galaxy magnification bias* (**12+3**)
- 14.10-14.25** Unnikrishnan Sureshkumar, A. Durkalec, A. Pollo (*Astronomical Observatory of the Jagiellonian University, Kraków, Poland*) *Galaxy properties as tracers of environment in the cosmic web* (**12+3**)
- 14.25-14.40** Dr. Olena Torbaniuk (*University Federico II in Naples, Naples, Italy*) *Improved technique for quasar continuum prediction in the Ly $\alpha$  forest based on composite spectra* (**12+3**)
- 14.40-14.55** Ian Hendricksen (*McGill University, Montréal, Canada*) *Preliminary Global 21cm Observations with MIST from the Canadian High Arctic* (**12+3**)

- 14.55-15.10** Vadym Bidula, R. Monsalve, J. Sievers (*McGill University, Montréal, Canada*) *Dynamic model of the ionosphere for wide-field radio experiments* **(12+3)**
- 15.10-15.25** Christopher Barbarie (*McGill University, Montréal, Canada*) *Drone-Based Calibration Technique for The Array of Long Baseline Antennas for Taking Radio Observations from the Sub-Antarctic (ALBATROS)* **(12+3)**
- 15.25-15.30** Aditya Narendra (*Jagiellonian University, Kraków, Poland*) *Predicting the redshift of gamma-ray loud AGNs using supervised machine learning* **(poster, 5)**

# Tuesday, October 25

---

## Section ‘Stellar Astrophysics and Interstellar Medium’

Time Zone: UTC+0

Chair: Roman Akhmetshyn

- 10.10-10.55** Dr. Ivan Andronov (*Odesa National Maritime University, Odesa, Ukraine*) *Mathematical modeling of the light curves of variable stars: review and atlas of the light curves (invited, 40+5)*
- 10.55-11.10** Alaxender Panchal (*Aryabhata Research Institute of Observational Sciences, Nainital, India*) *Photometric and spectroscopic analysis of contact binaries. (12+3)*
- 11.10-11.25** Katarzyna Nowak (*University of Hertfordshire, Hatfield, United Kingdom*) *Could kilomasers pinpoint supermassive stars? (12+3)*
- 11.25-11.40** Polina Dimitriieva (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) *Study of the Lithium abundance in solar-type stars (12+3)*
- 11.40-11.45** Olivia Muzyka (*Gimnasium “Academia”, Kyiv, Ukraine*) *Close binary star system Cygnus X-1. Relative and absolute photometry. (poster, 5)*
- 11.45-12.30** **coffee-break**
- 12.30-12.45** Dr. Vitalii Breus (*Odesa National Maritime University, Odesa, Ukraine*) *Spin and orbital variability of the intermediate polar RX J2133.7+5107 (12+3)*
- 12.45-13.00** Dr. Devendra Bisht (*Indian Centre for Space Physics, Netaji Nagar Kolkata, India*) *Study of open cluster King 13 using CCD VI, 2MASS and Gaia DR2 Astrometry. (12+3)*
- 13.00-13.15** Dr. Vitalii Breus (*Odesa National Maritime University, Odesa, Ukraine*) *Photometric monitoring of short-period eclipsing binaries discovered at Astronomical Observatory on Kolonica Saddle (12+3)*
- 13.15-13.20** Jakub Tokarek (*Astronomical Observatory Institute, Adam Mickiewicz University in Poznań, Poznań, Poland*) *Search for hierarchical systems in the Gaia EDR3 (poster, 5)*

# Wednesday, October 26

---

## Section 'Solar System & extrasolar planets'

**Time Zone:** UTC+0

Chair: Olena Shubina

- 10.00-10.15** Olena Shubina, M. Husárik, O. Ivanova (*Astronomical Institute of the Slovak Academy of Sciences, Tatranská Lomnica, Slovak Republic; Main Astronomical Observatory of National Academy of Sciences of Ukraine, Kyiv, Ukraine*) Multiwavelength photometry of comet C/2013 X1 (Pan-STARRS) (12+3)
- 10.15-10.30** Kateryna Kulish, O. Ivanova (*Comenius University in Bratislava, Slovakia*) Investigation of dust component of hyperbolic comet C/2015 VL62 (12+3)
- 10.30-10.45** Oleksandra Pyshna, A. Baransky, S. Borysenko (*Astronomical Observatory of Taras Shevchenko National University of Kyiv, Ukraine*) Photometry, astrometry and dust productivity analysis of comet 67P/Churyumov-Gerasimenko in 2021-2022 (12+3)
- 10.45-11.30** Dr. Oleksiy Golubov (*Institute of Astronomy Kharkiv National University, Kharkiv, Ukraine*) Search for metallic asteroids (invited, 40+5)
- 11.30-11.45** Valeriia Rychahova, I. Slyusarev (*Institute of Astronomy Kharkiv National University, Kharkiv, Ukraine*) Phase and color ratio method for searching areas with anomalous optical roughness on the Vesta surface (12+3)
- 11.45-12.00** Varnana M. Kumar, T. E. Girish, T. N. Sathyan, B. Longhinos, J. Binoy (*Department of physics Marivanious College Trivandrum, Kerala, India*) Tidal heating in potentially habitable extrasolar planets (12+3)
- 12.00-12.15** Roman Akhmetshyn, S. Metchev, R. Brown, M. Mazur, B. Amblard (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Research of Kuiper belt objects and exoplanet transits using robotic telescope array (12+3)
- 12.15-12.45** coffee-break
- 12.45-13.30** Prof. Stanimir Metchev (*Western University, London, Canada*) Weather on other worlds: from studying clouds and winds to seeking life (invited, 40+5)
- 13.30-13.45** Samantha Lambier, S. Metchev, G. Suárez, J. Hales, J. Martinovic (*Western University, London, Canada*) Characterizing the Input Sample for the POET Transiting Exoplanet Microsatellite Mission (12+3)
- 13.45-14.00** Burcak Yeşilirmak (*Akdeniz University, Antalya, Turkey*) Implementation of Floating Point Arithmetics with Accurate Rounding to the Two Body Problem (12+3)
- 14.00-14.15** A. Nahurna, Mykhailo Solomakha, M. Lobodenko, A. Baransky (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Investigation of planetary systems of WASP, TrES, Qatar and Kepler projects by using transit photometry with O-C parameter tracking and TTV method application on Kyiv Comet Station (12+3)
- 14.15-14.30** Mariia Lobodenko, I. Kulyk, Ya. Pavlenko, A. Nahurna, M. Solomakha, A. Baransky (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Comparative analysis of observations of the selected exoplanet transits obtained at the Kyiv Comet station, with TESS and Kepler Space Telescopes (12+3)

# Thursday, October 27

## Section ‘Atmospheric studies and space geophysics’

Time Zone: UTC+0

Chair: Maksym Vasiuta

- 12.00-12.15** Thara N Sathyan, V. M. Kumar, T. E. Girish, J. Binoy (*University College Of Engineering Kariavattom, Thiruvananthapuram, India*) Comparison of radioactive element distribution in Earth, Moon and Mars (**12+3**)
- 12.15-12.30** Maksym Vasiuta, H. Järvinen (*Institute for Atmospheric and Earth System Research, University of Helsinki, Helsinki, Finland*) Validation of the Earth planetary albedo using top-of-atmosphere fluxes of numerical weather prediction model (**12+3**)
- 12.30-12.45** Yuliia Yukhymchuk (*Laboratoire d’Optique Atmosphérique, Villeneuve-d’Ascq, France*) Air quality monitoring in Kyiv with the AirVisual network: pollution by PM 2.5 and PM 10 (**12+3**)
- 12.45-13.00** Anastasiia Sokareva, O. Ivaniga, N. Tkachenko (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Antarctic tropopause above Marambio station in the conditions of the ozone hole during 2004-2019 (**12+3**)
- 13.00-13.15** Bohdan Petrenko, L. Kozak, E. A. Kronberg, R. Akhmetshyn (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; Space Research Institute of the National Academy of Sciences of Ukraine and the State Space Academy of Ukraine, Kyiv, Ukraine*) Dispersion wave analysis of kink-like and stationary-like current sheet flapping motions in the Earth’s magnetotail (**12+3**)
- 13.15-13.20** Sergei Petrishchevskii, Yu. Rapoport, V. Grimalsky, V. Reshetnyk, A. Grytsai, A. Liashchuk, A. Fedorenko (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Penetration of electric field from the near-ground source to the ionosphere. Problem of dynamic-quasistatic limiting pass (**poster, 5**)
- 13.20-13.25** Dr. Serhiy Cheremnykh, O. Cheremnykh, D. Vlasov, T. E. Kaladze, E. Kronberg (*Space Research Institute under NAS Of Ukraine and State Space Agency of Ukraine, Kyiv, Ukraine*) Evanescent acoustic-gravity waves in a rotating stratified atmosphere (**poster, 5**)

13.25-13.40 coffee-break

## Section ‘Solar physics and heliosphere’

Chair: Daria Trotsenko

- 13.40-14.25** Dr. Olena Podladchikova (*Astrophysical Institute of Potsdam, Potsdam, Germany*) Picoflares in the Solar corona observed by Solar Orbiter (**invited**), **40+5**
- 14.25-14.40** Anitha Ravishankar, G. Michalek, S. Skone, E. Spanswick, R. Gillies (*University of Calgary, Calgary, Canada*) Kinematics of coronal mass ejections and auroral science (**12+3**)

- 14.40-14.55** Sanghita Chandra, Ch. Saha, D. Nandy (*Max Planck Institute for Solar System Research, Göttingen, Germany*) *Persistence of weak magnetic cycles during solar grand minima episodes* **(12+3)**
- 14.55-15.00** Ashutosh Pattnaik, A. Ravishankar, G. Michalek (*Jagiellonian University, Krakow, Poland*) *Transit time estimation of earthbound CMEs* **(poster), 5**
- 15.00-15.15** Jatav Bheem Singh (*Department of physics, Sikkim University, Gangtok, Sikkim, India*) *Coherent structures of kinetic Alfvén wave to study solar wind at 1AU* **(12+3)**
- 15.15-16.00** Dr. Oleksiy Agapitov (*SSL UC Berkeley, Berkeley, USA*) *Magnetic switchbacks in the young solar wind: generation and evolution* **(invited), 40+5**

# Friday, October 28

---

## Section 'High energy astrophysics'

Time Zone: UTC+0

Chair: Pavlo Plotko

- 12.15-13.00** Prof. Iurii Sushch (*North-West University, Potchefstroom, South Africa*) *Supernova remnants are sources of Galactic cosmic rays, or are they? (invited, 40+5)*
- 13.00-13.15** Natia Kevlishvili, (*Institute of Theoretical Physics, Ilia State University, Tbilisi, Georgia*) *The curvature emission model of unusual neutron star candidate 1RXS J141256.0+792204 (Calvera) (12+3)*
- 13.15-13.30** Angel Priyana Noel, H. Gaur, A. Gupta, A. Wiercholska, M. Ostrowski, V. Dhimman, G. Bhatta (*Astronomical Observatory of Jagiellonian University, Krakow, Poland*) *X-ray intraday variability of the TeV blazar Mrk 421 with XMM-Newton (12+3)*
- 13.30-13.45** Pavlo Panasiuk V. Sagun, K. Hamaguchi, N. Nagata (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) *Rotochemical heating in hybrid stars (12+3)*
- 13.45-14.15** **coffee-break**
- 14.15-14.30** Edoardo Giangrandi, V. Sagun, O. Ivanytskyi, C. Providência, T. Dietrich (*CFisUC, University of Coimbra, Coimbra, Portugal*) *Impact of asymmetric bosonic dark matter on neutron star properties (12+3)*
- 14.30-14.45** Dr. Anton Rudakovskiy, M. Khelashvili, S. Hossenfelder (*Bogolyubov institute for theoretical physics Kyiv, Ukraine*) *Dark matter profiles of SPARC galaxies (12+3)*
- 14.45-15.00** Pavlo Plotko, A. van Vliet, X. Rodrigues, W. Winter (*Deutsches Elektronen-Synchrotron DESY, Zeuthen, Germany*) *Indication of a Local Source of Ultra-High-Energy Cosmic Rays in the Northern Hemisphere (12+3)*
- 15.05-15.30** **Official closure**