



24th Young Scientists' Conference on Astronomy and Space Physics

April 24–29, 2017

Kyiv, Ukraine

## PROGRAMME

Registration, poster section, morning coffee and tea-breaks will take place in the poster-hall

### Monday, April, 24

09.00-13.00 - Registration

13.00-13.30 - Official opening

#### Section 'Solar Physics & Heliosphere'

Chair: Maksym Mohorian

Room 200

**13.30-14.15** N. G. Shchukina (*Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*) Our understanding of the Sun and the Sun-Earth Connection (invited)

**14.15-14.30** Andrii Prysiashnyi (*Astronomical Observatory of Ivan Franko National University of Lviv, Lviv, Ukraine*) Robust method for determination of solar magnetic field strength (12+3)

**14.30-14.45** Anna Tkachenko, O. K. Cheremnykh, A. N. Kryshchal (*Taras Shevchenko National University of Kyiv; Space Research Institute SSAU-NASU, Kyiv, Ukraine*) The realization and stability of kink mode  $m=1$  in magnetic tube with discontinuous magnetic field (12+3)

- 14.45-15.00** Valeriia Liakh (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Properties of wave propagation along the solar atmosphere above the facular region (**12+3**)
- 15.00-15.15** Mykola Shevchuk, V. N. Melnik, S. Poedts, V. V. Dorovskyy, J. Magdalenic, A. A. Konovalenko, A. I. Brazhenko, C. Briand, A. V. Frantsuzenko, H. O. Rucker, P. Zarka (*Institute of Radio Astronomy of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine*) The decimeter spikes as a tool for the coronal plasma parameters diagnostic (**12+3**)
- 18.30-21.00** Excursion to the Main Astronomical Observatory of the National Academy of Sciences of Ukraine

## Tuesday, April, 25

### Section ‘Stellar Astrophysics and Interstellar Medium’

Chair: Oleksiy Ivanyuk  
**Room 103**

**09.00-10.00 morning coffee**

- 10.00-10.15** Agnieszka Gurgul, W. Ogłóza, G. Stachowski, M. Żejmo (*Institute of Physics of Pedagogical University, Kraków, Poland*) Preliminary phase of the polarimetric survey from Mt. Suhora Astronomical Observatory (**12+3**)
- 10.15-10.30** Michał Żejmo, A. Słowikowska, K. Krzeszowski, P. Reig, D. Blinov (*Janusz Gil Institute of Astronomy University of Zielona Góra, Zielona Góra, Poland*) Optical linear polarization of 74 white dwarfs with the RoboPol polarimeter (**12+3**)
- 10.30-10.45** Vitalii Breus (*Odessa National Maritime University, Odessa, Ukraine*) Flexible Variable Star Extractor — new software for variable star detection using CCD photometry (**12+3**)
- 10.45-11.00** Maksym Mohorian, Y. Pavlenko, A. Suarez Mascareno, R. Rebolo, N. Lodieu, V. J. S. Bejar, J. I. Gonzalez Hernandez (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Flare activity of Proxima Cen in the emission H $\alpha$  and the resonance Ca II and Na I lines (**12+3**)

**11.00-11.30 tea-break**

- 11.30-11.45** Magdalena Szkudlarek, D. Gondek-Rosinska, M. Ansorg, L. Villain (*Janusz Gil Institute of Astronomy University of Zielona Góra, Zielona Góra, Poland*) Differentially Rotating Strange Quark Stars (**12+3**)
- 11.45-12.00** Oleh Buhajenko, B. Ya. Melekh (*Ivan Franko National University of Lviv, Lviv, Ukraine*) Photoionization modelling of planetary nebulae with realistic density distribution using detailed method for diffuse radiation calculation (**12+3**)

**12.30-13.30 lunch**

**14.00-19.00 City tour (walking tour)**

# Wednesday, April, 26

## Section 'Extragalactic Astrophysics & Cosmology'

Chair: Olena Torbaniuk

Room 103

**09.00-10.00 morning coffee**

**10.00-10.45** Peter Berczik (*Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*) Galaxy collision simulations with central Post Newtonian Supermassive Binary Black Holes (**invited**)

**10.45-11.00** Mykhailo Illiashyk, V. S. Akhmetov, P. N. Fedorov, A. B. Velichko (*V.N. Karazin Kharkiv National University, Kharkiv, Ukraine*) The kinematic research of Galaxy using data of PMA catalogue (**12+3**)

**11.00-11.15** Andrii Maliuk, I. A. Zinchenko (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) The research of oxygen abundance evolution in massive galaxies (**12+3**)

**11.15-11.30** Pavlo Panasyuk, B. Ya. Melekh (*Lviv Physics and Mathematics Lyceum, Lviv, Ukraine*) Influence of the thin shells with high density on the ionization structure of dwarf galaxies with active star formation (**12+3**)

**11.30-11.45** Anatoliy Tugay, N. G. Pulatova (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Two-dimensional correlation function for the distribution of isolated galaxies (**12+3**)

**11.45-12.00** Maxim Vasylenko, Yu. N. Kudrya (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Dipole bulk velocity of galaxies from the catalog 2MFGC based on new data sample (**12+3**)

**12.00-12.05** Julia Piotrowska, K. Chyży, B. Nikiel-Wroczyński, N. Nowak, V. Heesen, V. Vacca, R. Paladino (*Jagiellonian University, Kraków, Poland*) Measurements of galaxy fluxes with CASA from MSSS (LOFAR). (**poster**)

**12.05-12.35 tea-break**

**12.35-12.50** Olena Kompaniets, M. Sobolenko, P. Berczik (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Large scale direct galaxy collision simulations of NGC 6240 with central Supermassive Black Hole Binary system (**12+3**)

**12.50-13.05** Vadim Voytsekhovskiy, A. V. Tugay (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Simulation of large-scale structure of Universe by random distributions (**12+3**)

**13.05-13.20** Fedir Karasenko, O. Sergijenko (*Ivan Franko National University of Lviv, Lviv, Ukraine*) First molecules in the early Universe (**12+3**)

**13.20-13.35** Maria Khelashvili, V. I. Zhdanov (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Broadening of spectral lines in a strong gravitational field of compact astrophysical objects (**12+3**)

**13.35-13.50** Lyudmyla Berdina, V. S. Tsvetkova (*Institute of Radio Astronomy of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine*) Method for determination the time delays in presence of microlensing (**12+3**)

**13.50-14.05** Serhii Dylda, V. I. Zhdanov (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Scalar field models vs hydrodynamics with barotropic equation of state in the homogeneous isotropic cosmology (**12+3**)

**14.05-15.00 lunch**

## Section ‘High Energy Astrophysics’

Chair: Olena Torbaniuk

Room 103

- 15.00-15.30** Oleksandr Sushchov, P. Homola, P. Poznanski, N. Dhital, K. Almeida-Cheminant (*Institute of Nuclear Physics of the Polish Academy of Sciences, Kraków, Poland*) Cosmic-Ray Extremely Distributed Observatory: a global cosmic ray detection framework (**invited**)
- 15.30-15.45** Anton Dmytriiev, A. Neronov (*University of Geneva, Geneva, Switzerland*) Time averaged very-high-energy gamma-ray spectra of Mrk 421 and Mrk 501 (**12+3**)
- 15.45-16.00** Mariana Patrii, O. Petruk (*Ivan Franko National University of Lviv, Lviv, Ukraine*) Evolution of electron injection efficiency in SN1987A (**12+3**)
- 16.00-16.15** Taras Kuzyo, O. Petruk (*Ivan Franko National University of Lviv, Lviv, Ukraine*) Three-Dimensional Simulations of Post-Adiabatic Supernova Remnants in the Interstellar Magnetic Field (**12+3**)
- 16.15-16.30** Roman Gnatyk (*Astronomical Observatory of Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Signatures of the ultra-high energy cosmic ray acceleration by the magnetar SGR 1900+14 in the HAWC gamma-ray observatory data (**12+3**)
- 18.00-22.00** Organ hall / opera hall / etc.

## Thursday, April, 27

### Section ‘Atmospheric studies and space geophysics’

Chair: Andrii Bovchaliuk

Room 103

**09.00-10.00** morning coffee

- 10.00-10.15** Andrew Prokhorenkov, L. Kozak, E. Kronberg, B. Petrenko, E. Grigorenko, A. Lui, I. Kundelko (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Analysis of the characteristic frequencies and cascade processes in the Earth magnetosheath (**12+3**)
- 10.15-10.30** Bohdan Petrenko, L. Kozak, E. Kronberg, E. Grigorenko, A. Prokhorenkov (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) The turbulent and dynamic processes in the Earth’s magnetotail (**12+3**)
- 10.30-10.45** Eugen Tkachenko, Yu. Rapoport, V. Grimalsky (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) The excitation of Large-scale hydromagnetic structures in the ionosphere caused by different types of sources (**12+3**)
- 10.45-11.00** Dmytro Vlasov, A. S. Parnowski (*Space Research Institute of the National Academy of Sciences of Ukraine; State Space Agency of Ukraine, Kyiv, Ukraine*) Local geomagnetic activity forecasting using the regression method (**12+3**)
- 11.00-11.15** Yulia Yukhimchuk, G. Milinevsky, V. Bovchaliuk (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Kyiv aerosol pollution during 1-7 and 20-25 September 2015 (**12+3**)
- 11.15-11.30** Inna Yatsun, G. Milinevsky (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Air pollution by Particulate Matter mass concentration in Kiev (**12+3**)
- 11.30-12.00** tea-break

- 12.00-12.15** Denys Hladikov, A. Bovchaliuk (*Taras Shevchenko National University of Kyiv, Ukraine*) Algorithm for generation and processing synthetic data for satellite mission Aerosol-UA (12+3)
- 12.30-12.45** Leonid Olifer, V. Ya. Choliy (*The National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"*) DDscat 7.3.1.C++ new features and possibilities. First experience (12+3)
- 12.15-12.30** Leonid Olifer, V. Ya. Choliy (*The National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"*) On the determination of snowflake properties from simulation of scattered light (12+3)
- 12.45-13.00** Maksym Vasyuta, V. Ya. Choliy (*Taras Shevchenko National University of Kyiv, Ukraine*) On the usage of the Singular Spectrum Analysis for precision estimation and editing of total atmospheric delay time series (12+3)
- 13.00-13.05** Iryna Kundelko, L. Kozak, E. Kronberg, A. Prokhorenkov, B. Petrenko (*Taras Shevchenko National University of Kyiv, Ukraine*) Geomagnetic pulsations as an indicator of substorm (poster)
- 13.05-13.10** Sergii Cheremnykh, I. T. Zhuk (*Space Research Institute of the National Academy of Sciences of Ukraine; State Space Agency of Ukraine, Kyiv, Ukraine*) Discrete ULF modes in the Earth's magnetosphere near the Alfvén frequency minimum (poster)
- 13.30-14.30** lunch
- 17.45-22.00** Organ hall / opera hall / etc.

## Friday, April, 28

### Section 'Solar System & Exoplanets'

Chair: Olena Shubina  
Room 103

**09.00-10.00** morning coffee

- 10.00-10.15** Igor Kirilenko, A. A. Golubov (*V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*) Dynamic control of a spacecraft orbit in a noncentral gravity field (12+3)
- 10.15-10.30** Tetiana Hromakina (*V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*) Problems in constraining surface composition of different atmosphereless Solar System bodies using radiative transfer models (12+3)
- 10.30-10.45** Anhelina Voitko, V. V. Troianskiy (*Odessa I. I. Mechnikov National University, Odessa, Ukraine*) Orbital resonances in Saturn system (12+3)
- 10.45-11.00** Alice Horbachova, V. V. Troianskiy, O. A. Bazyey (*Astronomical Observatory of Odessa I. I. Mechnikov National University, Odessa, Ukraine*) Dynamics of multiple system Pluto (12+3)
- 11.00-11.15** Olena Shubina, O. Ivanova, E. Zubko, G. Videen, M. Mommert, J. L. Hora, Z. S. Krišandová, J. Svoreň, A. Novichonok, S. Borysenko (*Main Astronomical Observatory of the National Academy of Sciences, Kyiv, Ukraine*) Colour variations of Comet C/2013 UQ4 (Catalina) (12+3)
- 11.15-11.30** Katerina Bovkun, V. M. Reshetnyk, V. Ya. Choliy (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Gravitational fields model of Solar System small bodies (12+3)

**11.30-11.45** Olga Mikhalchenko, V. G. Shevchenko (*V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*) Database of asteroids with high-quality occultation diameters **(12+3)**

**11.45-11.55** Yuliia Kalinina, V. Reshetnyk (*Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*) Spectral properties of asteroids on the different heliocentric distances **(poster)**

**11.55-13.00** Poster section + tea-break

**13.00-13.30** Official closure

**13.30-14.30** lunch

## Saturday, April, 29

**10.00-14.00** Museum of Folk Architecture and Life of Ukraine