Olena Torbaniuk

Curriculum Vitae

Department of Physics and Astronomy
'Augusto Righi' (DIFA), University of Bologna,
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Personal information:

Date of birth: November 13, 1992
Place of birth: Kyiv, Ukraine
Nationality: Ukraine
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Education:

September 2009 – July 2013 **BSc in Physics**, *Astronomy and Space Physics Department, Taras Shevchenko National University of Kyiv, Ukraine.*

September 2013 – July 2015 **MSc in Astronomy (cum laude)**, *Astronomy and Space Physics Department, Taras Shevchenko National University of Kyiv, Ukraine.*

November 2015 – December 2017 **PhD in Astrophysics**, *Department for Extragalactic Astronomy and Astroinformatics, Main Astronomical Observatory of National Academy of Sciences of Ukraine, Kyiv, Ukraine.*
Thesis title: 'The mean transmission of the intergalactic medium using Lyα-forest in the quasar spectra' (supervisior: Dr. Iryna Vavilova)

January 2018 – March 2021 **PhD in Physics**, *Department of Physics 'E. Pancini', University Federico II in Napoli, Italy.*
Thesis title: 'The connection between star-formation and supermassive Black Hole accretion in the local Universe' (supervisiors: Prof. Maurizio Paolillo, Prof. Giuseppe Longo)

Work experience:

April 2021 – March 2023 **postdoctoral researcher**, *Department of Physics 'E. Pancini', University Federico II in Napoli, Italy.*

April 2023 – present **postdoctoral researcher**, *Department of Physics and Astronomy 'Augusto Righi', Alma Mater Studiorum – University of Bologna, Italy; INAF – Astrophysics and Space Science Observatory of Bologna (OAS, associate).*

Research interests:

Extragalactic astronomy: the co-evolution of host galaxies and their central SMBHs; multiwavelength studies of the active galactic nuclei: optical, IR and X-ray bands; AGN variability;

Observational cosmology: large scale structure of the Universe: Lyα-forest, intergalactic medium;

Personal skills:

Languages

Mother tongues: Ukrainian

Other: English (Upper Intermediate), Italian (Pre-Intermediate)

Computer Skills

Platform: Mas OS X, Linux, Windows

Programming: Python, IDL, C/C++, Qt

Typesetting systems: LaTeX, HTML

Special Software: VOSpec, CIAO, Xspec, DECH

Scientific activities:

Awards and honors:

2021 **2nd place in the LSST AGN Data Challenge** for the development of a deep learning tool for AGN detection based on images from large sky surveys (in collaboration with Doorenbos L., Cavuoti S., Paolillo M., Longo G., Brescia M., Sznitman R. and Márquez-Neila P.)

Membership of a joint projects & collaborations:

2010 – 2012 Project "Testing fundamental physics with cosmology", SCOPES grant №128040 of the Swiss National Science Foundation;

2013 – 2017 Project "Matter distribution on local and cosmological scales of the Universe and development of interactive tools of its visualisation" of target complex programme of National Academy of Sciences of Ukraine on scientific space research;

2013 – 2017 Project "Magnetic fields in the Universe: their generation and evolution", SCOPE IZ7370-152581 grant of the Swiss National Science Foundation.

2021 – present Euclid science group on Galaxy and AGN evolution, work package 9: Type 1 and Type 2 AGN

Teaching/supervising experience:

2020 – 2021 **Supervisor of Bachelor thesis**, *Department of Physics 'E. Pancini', University Federico II in Napoli (Naples, Italy).*

- **Pasquale Ruocco**, *thesis title: 'La correlazione tra Nuclei Galattici Attivi e i processi di formazione stellare nell'Universo locale' (eng: 'The connection between AGN and star-forming processes in the local Universe').*
- **Silvia Teresa Guida**, *thesis title: 'Le masse dei buchi Neri supermassicci in un campione di Quasar' (eng: 'The masses of supermassive black holes in a sample of quasar').*

2021 – 2022 **Teaching lectures on the co-evolution of galaxies and active galactic nuclei**, *part of 'Multi-messenger and particle astrophysics' course for PhD students, Department of Physics 'E. Pancini', University Federico II in Napoli (Naples, Italy).*

Additional scientific activities:

Conferences, symposia and workshops

- III-IV International conference of young scientists "Modern Problems of Theoretical Physics", Kyiv, Ukraine, 2011-2012;
- XIX-XXIII, XXVI International Young Scientists' Conferences on Astronomy and Space Physics, Kyiv, Ukraine, 2012-2016, 2019;
- Astronomy and Space Physics International Conference dedicated to the memory of A. Mandzhous, Kyiv, Ukraine, 2012;
- XXI, XXIII Annual Student Conference Week of Doctoral Students, Prague, Czech Republic, 2012, 2014;
- ICTP Workshop on Large Scale Structure, Trieste, Italy, 2012;
- Workshop on the target program of NAS of Ukraine "Astrophysical and Cosmological Problems of Hidden Mass and Dark Energy", 21-22 November 2012, Kyiv, Ukraine;
- V International Astronomical Conference "Astrophisica Nova", Czestochowa, Poland, 2013;
- International Conference "Astronomy and Space Physics at the University of Kyiv", Kyiv, Ukraine, 2013, 2018;
- IAU Symposium 304: Multiwavelength AGN Surveys and Studies, Yerevan, Armenia, 2013;
- ICTP Summer School on Cosmology, Trieste, Italy, 2014;
- ICTP Workshop on Cosmology from Baryons at High Redshift, Trieste, Italy, 2014;
- VII-VIII International Scientific Conference "Selected issues of astronomy and astrophysics" in honor of Bohdan Babiy, Lviv, Ukraine, 2014, 2016;
- Fifth Byurakan International Summer School for young astronomers, Byurakan, Armenia, 2016;
- Conference dedicated to 70th anniversary of Byurakan Astrophysics Observatory, Byurakan-Yerevan, Armenia, 2016;
- The European Week of Astronomy and Space Science (EWASS), Prague, Czech Republic, 2017;
- International Conference "Astronomy and Space Physics at the University of Kyiv", Kyiv, Ukraine, 2018;
- Active Galactic Nuclei 13: Beauty and the Beast (AGN'13), Milan, Italy, 2018;
- AHEAD X-ray and Multiwavelength Surveys School, Garching bei München, Germany, 2018;
- X-ray Astronomy conference 2019, Bologna, Italy, 2019;
- Young Astronomers on Galactic Nuclei (YAGN'20), Copenhagen, Denmark, 2020 *(online)*;
- Active Galactic Nuclei XIV: The Renaissance of Black Holes and Galaxies (AGN'14), Florence, Italy, 2022;
- The European Astronomical Society annual meeting (EAS), Valencia, Spain, 2022;
- The OPTICON RadioNet Pilot (ORP) Proposal Writing School 2023 *(online)*;

Scientific committees:

2011 organization of annual international conference "Relativistic Astrophysics, Gravitation and Cosmology" (member of LOC) (Bogolyubov Institute for Theoretical Physics, Kyiv, Ukraine);

2011 – present organization of the annual international Young Scientists' Conference on Astronomy and Space Physics (2011-2012, from 2017: member of LOC; 2013-2014: secretary of LOC; 2015-2016: chair of LOC) (Taras Shevchenko National University of Kyiv, Ukraine) `http://ysc.kiev.ua/`

2017 organization of annual meeting "The European Week of Astronomy and Space Science", EWASS (volunteer) (Prague, Czech Republic);

2022 – present member of the jury of the All-Ukrainian competition (3rd stage) of research projects in Physics and Astronomy among high school students-members of the Junior Academy of Sciences of Ukraine;

2023 – present referee for papers submitted to A&A;

Publications:

Refereed journals:

1. **Ivashchenko G., Sergijenko O., Torbaniuk O.** Composite spectra of quasars with different UV spectral index. MNRAS, V. 437, P. 3343-3361, 2014
2. **Vavilova I. B., Ivashchenko G. Yu., Babyk Iu. V., Sergienko O. M., Dobrycheva D. V., Torbaniuk O. O., Vasylenko A. A., Pulatova N. G.** Usage of the astrocosmic database in multi-wavelength and cosmological properties of extragalactic sources. Cosmic Science and Technology, V. 5, P. 94-107, 2015
3. **Torbaniuk O.** A quasar sample for Lyα-forest studies from the Data Release 10 of the Sloan Digital Sky Survey. Advances in Astronomy and Space Physics, V. 5, I. 2, P. 84-88, 2015
4. **Torbaniuk O.** Influence of the continuum determination method on the mean transmission in the Lyα forest. Advances in Astronomy and Space Physics, V. 6, I. 1, P. 34-40, 2016
5. **Torbaniuk O., Ivashchenko G.** The mean transmission of the neutral intergalactic medium in the Lyα-line from a sample of high-resolution quasar spectra. Kinematics and Physics of Celestial Bodies, V. 33, I. 4, P. 184-190, 2017
6. **Torbaniuk O., Paolillo M., Carrera F., Cavuoti S., Vignali C., Longo G., Aird J.** The connection between star-formation rate and supermassive Black Hole accretion in the local Universe. MNRAS. V. 506, P. 2619-2637, 2021
7. **Doorenbos L., Torbaniuk O., Cavuoti S., Paolillo M., Longo G., Brescia M., Sznitman R. and Márquez-Neila P.** ULISSE: A Tool for One-shot Sky Exploration and its Application to Active Galactic Nuclei Detection. A&A. V. 666, A171, 2022
8. **Riccio G., Yang G., Małek K., Boquien M., Junais M., Pistis F., Hamed M., Grespan M., Paolillo M., Torbaniuk O.** X-ray luminosity – star formation rate scaling relation: constraints from the eROSITA Final Equatorial Depth Survey (eFEDS), A&A. V. 678, A164, 2023

9. **Torbaniuk O., Paolillo M., D'Abrusco R., Georgakakis A., Vignali C., Carrera F. J., Civano F.** Probing supermassive black hole growth and its dependence on stellar mass and star-formation rate in low-redshift galaxies. MNRAS. V. 527, P. 12091-12108, 2024

Conference proceedings:

1. **Ivashchenko G., Sergijenko O., Torbaniuk O.** Improved technique for quasar composite spectra construction. In Proceedings of VI European Summer School on experimental Nuclear Astrophysics, September 18-27, 2011
2. **Torbaniuk O., Ivashchenko G., Sergijenko O.** Some spectral properties of the quasar ultraviolet bump. In Week of Doctoral Students' Proceedings of Contributed Papers: Part III - Physics (eds. J. Safrankova and J. Pavlu), Prague, Matfyzpress, pp. 123-128, 2012
3. **Torbaniuk O., Ivashchenko G.** Dependence of equivalent width of quasar emission lines on UV-optical spectral index. In Proceedings of the IAU Symposium 304, V. 304, P. 282-283, 2014
4. **Torbaniuk O., Ivashchenko G.** Dependence between some spectral and physical characteristics of quasars. In Week of Doctoral Students' Proceedings of Contributed Papers — Physics (eds. J. Safrankova and J. Pavlu), Prague, Matfyzpress, pp. 42-47, 2014