

Curriculum Vitae of Dr. Vitaly Neustroev

Space Physics and Astronomy research unit, University of Oulu, Finland

1. Personal details

- **Surname, Given name:** Neustroev Vitaly
- **Address:** Space Physics and Astronomy research unit, P.O. Box 3000, 90014 University of Oulu, Finland
- **Citizenship:** Ireland, Russia
- **Emails:** vitaly@neustroev.net; vitaly.neustroev@oulu.fi
- **Personal (academic) website:** <https://vitaly.neustroev.net>

2. Research interests

- Interacting binary stars (cataclysmic variables, low- and high- mass X-ray binaries, symbiotic stars, etc.)
- Accretion discs
- Optical and X-ray transients
- High energy astrophysics
- Brown dwarfs and white dwarfs
- Computational astrophysics, image processing, data analysis, time-series analysis

3. Education and degrees awarded

- **Docent** (astronomy): University of Oulu, Finland; October 15, 2012.
- **Ph.D.** (astrophysics): Special Astrophysical Observatory, Nizhnij Arkhyz, Russia; 03.11.1999
- **B.S., M.S.** (astronomy): Kazan State University, Russia; 1992

4. Current position

- **Jan 2018 – present:** Senior research fellow, University of Oulu, Finland
- **Jun 2013 – present:** Member of the MAGIC collaboration

5. Previous work experience

- **May 2016 – Dec 2017:** Senior research fellow, University of Turku, Finland
- **Sep 2010 – May 2016:** University researcher / Senior research fellow, University of Oulu, Finland
- **Aug 2008 – Sep 2010:** Software Developer, J2 Global Ireland Ltd., Galway, Ireland
- **Apr 2008 – Jun 2008:** Support Scientist, The Irish Centre for High-End Computing, NUI Galway, Ireland
- **Jul 2008 – Sep 2010:** Research Associate of the Centre for Astronomy, NUI Galway, Ireland
- **Apr 2003 – Mar 2008:** Research Scientist in Astrophysics, National University of Ireland, Galway, Ireland
- **Jun 2001 – Apr 2003:** Assistant Professor, Udmurt State University, Izhevsk, Russia
- **Dec 1997 – Jun 2001:** Lecturer, Udmurt State University, Izhevsk, Russia
- **Nov 1994 - Nov 1997:** Observer, Astronomical Station "Kosmoten", Nizhnij Arkhyz, Russia
- **Nov 1992 - Nov 1997:** Junior Researcher, Special Astrophysical Observatory, Nizhnij Arkhyz, Russia

6. Long term visits

- **University of Tübingen, Germany:** 2 weeks in 2022
- **The Roque de los Muchachos Observatory on La Palma, Spain:** 3 weeks in 2021
- **Instituto de Astronomía, Universidad Católica del Norte, Antofagasta, Chile:** 2 weeks in 2019
- **The Roque de los Muchachos Observatory on La Palma, Spain:** 4 weeks in 2019
- **Anton Pannekoek Institute, University of Amsterdam, The Netherlands:** 2 weeks in 2019
- **ESO Santiago & University of Valparaiso, Chile:** 2 weeks in 2018
- **The Roque de los Muchachos Observatory on La Palma, Spain:** 2 weeks in 2018
- **School of Physics & Astronomy, University of Southampton, UK:** 3 weeks in 2018
- **South-Western Institute For Astronomy Research at Yunnan University (SWIFAR-YNU) , China:** 1 week in 2018

- ESO Santiago & University of Concepción, Chile: 2 weeks in 2017
- Dark Cosmology Centre, University of Copenhagen, Denmark: 1 week in 2017
- The Roque de los Muchachos Observatory on La Palma, Spain: 3 weeks in 2017
- Dark Cosmology Centre, University of Copenhagen, Denmark: 1 week in 2016
- The Roque de los Muchachos Observatory on La Palma, Spain: 4 weeks in 2016
- The Roque de los Muchachos Observatory on La Palma, Spain: 4 weeks in 2015
- Instituto de Astronomia, UNAM, Ensenada, Mexico: 3 weeks in 2015
- University of Kyoto, Japan: 2 weeks in 2014
- The Roque de los Muchachos Observatory on La Palma, Spain: 4 weeks in 2014
- University of Tübingen, Germany: 2 weeks in 2013
- Bologna Astronomical Observatory, University of Bologna, Italy: 2 weeks in 2008
- Bologna Astronomical Observatory, University of Bologna, Italy: 1 week in 2007
- Instituto de Astronomia, UNAM, Ensenada, Mexico: 2 weeks in 2006
- Bologna Astronomical Observatory, University of Bologna, Italy: 2 weeks in 2006
- Instituto de Astronomia, UNAM, Ensenada, Mexico: 3 weeks in 2005
- Bohyunsan Optical Astronomy Observatory, South Korea: 1 week in 2004
- Bologna Astronomical Observatory, University of Bologna, Italy: 2 weeks in 2004
- Instituto de Astronomia, UNAM, Ensenada, Mexico: 2 weeks in 2003

7. Leadership and supervision experience

- Over the years, I have supervised a number of undergraduate and Master's students in different universities. The most recent graduates are Mr. Iikka Mäntynen (2021, now a PhD student in University of Turku), Mr. Jussi Hedemäki (2021), and Mr. Aleksi Mattila (2022).
- At present, I'm supervising 4 Master's students (Ms. Paula Kvist, Mr. Miikka Siitonen, Mr. Aki Ruokanen, Mr. Oskari Tervo) and 1 Bachelor's student.
- I was acting as a team leader/coordinator of an international team that was set up in response to a 2020 Call by the International Space Science Institute (ISSI).

8. Funding:

- Unfortunately, I have not been able to secure significant research funding from Academy of Finland (however, my application in response to the 2021 Call was evaluated as excellent). Nevertheless, I have received a number of smaller grants from different sources (mostly from FINCA). For example, In 2017 I have been granted 7000€, in 2018 – 18500€, in 2019 – 5000€, in 2020 – 3000€, in 2022 – 6000€.

9. Teaching

- I taught different Astronomy and Programming courses, all of which I have created from scratch. These courses include:
 - University of Oulu, Finland (**in English**):
 - "Astrophysics"
 - "Stellar atmospheres"
 - "Time Series Analysis in Astronomy"
 - "Astrophysics of Interacting Binary Stars"
 - "Topics of Modern Astrophysics"
 - "Observational Astrophysics and Data Analysis"
 - "Astronomical Data Analysis with Computers"
 - National University of Ireland, Galway, Ireland (**in English**):
 - "Methods of Astronomical Observations"
 - Udmurt State University, Izhevsk, Russia (**in Russian**):
 - "General astronomy"
 - "History of Astronomy"
 - "Calculus" and "Analytic geometry"
 - "Mathematical Methods of Modelling in Astrophysics"
 - "Programming"

10. Research-related professional service

- Pre-examiner of a doctoral dissertation of Juhani Mönkkönen (University of Turku)
- Invited referee of a research proposal submitted to National Science Centre, Poland
- Committee memberships, peer-review
 - Member of the FINCA Board (2014–2015; since 2018)
 - Panel member of the XMM-Newton Observing Time Allocation Committee (AO-20 and 21, 2020-2021)
 - Panel member of the ESO Observing Programmes Committee (2015–2016)
 - President (2013–2015) and Board member (2011–2015) of the Finnish Astronomical Society
- Invited referee for international journals
 - Monthly Notices of the Royal Astronomical Society
 - Publications of the Astronomical Society of Japan
 - Advances in Space Research
 - Astronomy & Astrophysics
 - Astronomy Reports
 - EURASIP Journal on Applied Signal Processing
- Memberships in science project teams
 - NOT Transient Explorer (NTE), since 2018
 - Major Atmospheric Gamma Imaging Cherenkov (MAGIC) telescope collaboration, since 2013
 - ESA's M3 candidate Large Observatory for X-ray Timing, science team member, since 2012
 - ESA's M4 candidate X-ray polarimeter XIPE, Science team member, since 2015

11. Outreach experience and Press releases

- **"The Palace of Creative Youth" (Izhevsk, Russia):** Chairman of the AstroClub (1998–2003)
- **The NUI Galway's outreach programme:** the Open Nights at the astronomical observatory (2004–2010)
- **YLE News:** Finnish researchers discover new type of black hole (links in [English](#) and in [Finnish](#))
- **Tähdet ja avaruus**, 2014, No.8: Suomalaiset löysivät kevyimmän mustan aukon (Finnish researchers found the lightest black hole)

12. Skills

- **Winning Observing Time:** During the past few years, I have been the PI and co-I of a number of accepted proposals for observations with different large telescopes:
 - the PI of 7 accepted proposals for observations with ESO telescopes;
 - co-I of 6 GTC successful proposals;
 - co-I of 2 Hubble Space Telescope proposals.

I have also been granted observing time (as PI or co-I) on many other optical and X-ray telescopes (TNG, NOT, BTA, XMM-Newton, Suzaku, Swift, etc).

- **Observing Experience:** I have extensive experience of participating in observations on large, medium and small optical telescopes, including 6-m BTA and 1-m Zeiss-1000 at the Special Astrophysical Observatory (Russia), ESO/VLT and NTT, 10.4-m GTC, 4.2-m WHT and 2.5-m NOT telescopes on the Canary Island La Palma (Spain), the 2.1-m and 1.5-m telescopes of the Observatorio Astronomico Nacional at San Pedro Martir (Mexico), the 1.8-m telescope of the Bohyunsan Optical Astronomy Observatory (South Korea), the 1.5-m Cassini telescope at Loiano (Italy). The observations carried out were optical and infrared photometry and long slit and echelle spectroscopy, which has given me a broad experience in observing and data reduction techniques.
- **Operating large telescopes:** During 1995–97 I have served as a support astronomer at the 6-m BTA telescope of the Special Astrophysical Observatory (Russia). Also, as a member of the MAGIC collaboration, which operates two 17-m Cherenkov telescopes on La Palma, I have had annual data taking shifts in 2014-2017 and in 2019. After the shift in 2015 I have been promoted to a shift leader role.
- **Data Analysis:** I have extensive experience in image and spectra processing data from photon-counters and CCDs. I have reduced and analyzed long slit and echelle spectrophotometry, and aperture photometry using various software packages. I have also reduced and analyzed data from different X-ray telescopes.

- **Computing Skills:**
 - Administrator-level experience with Unix and Windows.
 - Programming with Python, Fortran, C/C++, Pascal, PL/SQL, etc.
 - Astronomy related software including IRAF, MIDAS, HEASoft, Starlink and IDL.
- **Languages:** English (excellent - full proficiency), Russian (native)

13. Research-related professional service

- Committee memberships, peer-review
 - Member of the FINCA Board (2014–2015; since 2018)
 - Panel member of the XMM-Newton Observing Time Allocation Committee (AO-20 and 21, 2020-2021)
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- Memberships in science project teams
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14. Memberships

- International Astronomical Union (IAU)
- Committee on Space Research (COSPAR)
- Finnish Astronomical Society

15. Publications and talks

- 223 publications (ADS), 133 papers in refereed journals (incl. 1 in Science, 2 in Nature, and 1 in Nature Astronomy), and numerous talks at international and local scientific conferences.

16. Career Breaks

- I have had a break in my academic career from 2008 July till 2010 September.