

Curriculum Vitae - **Dr. Sergey Tsygankov**
Department of Physics and Astronomy, University of Turku
September 2024

Personal information

Full name: Sergey Tsygankov
Date and place of birth: January 18, 1981; Moscow, Russia
Married, children born in 2007 and 2010

Contact information

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Research interests

highly magnetised neutron stars (X-ray pulsars, magnetars), ultraluminous X-ray sources, compact objects, gamma-ray lines, nuclear astrophysics, Galactic diffuse emission, supernova explosions and remnants

Education and degrees awarded

09/2012 **Docent of Astronomy**, University of Oulu, Oulu, Finland
03/2007 **Ph.D.**, thesis topic: *Study of accreting neutron stars with strong magnetic fields from X-ray observatories*, Space Research Institute, Moscow, Russia
02/2004 **MSc in Nuclear Physics**, Moscow Engineering Physics Institute, Moscow, Russia

Languages

English (fluent), Russian (mother tongue), German (basic), Swedish (basic), Finnish (basic)

Current position

09/2017– **University researcher (yliopistotutkija)**, Department of Physics & Astronomy, University of Turku

Previous work experience

09/2014–08/2017 **Senior researcher (Junior group leader)**, Tuorla Observatory, Department of Physics & Astronomy, University of Turku
09/2011–08/2014 **Postdoctoral position**, Finnish Centre for Astronomy with ESO (FINCA), University of Turku
07/2008–08/2011 **Postdoctoral position**, Max Planck Institute for Astrophysics, Garching, Germany
08/2007–08/2011 **Researcher**, Astrophysics Department (Russian Science Data Center (RSDC) for the INTEGRAL project), Space Research Institute, Moscow, Russia
03/2002–07/2007 **Junior Researcher**, Astrophysics Department (Russian Science Data Center (RSDC) for the INTEGRAL project), Space Research Institute, Moscow, Russia

Extended visits to foreign institutes

2023 3-weeks visit to University of Oxford, UK
2015, -17, -19, -22 2-weeks visits to DIAS and DCU, Ireland
2016, -18 3- and 2-weeks visits to Anton Pannekoek Institute for Astronomy, Amsterdam, Netherlands
2019-21 several 2-weeks visits to the Leiden University, Netherlands
2017 2 weeks at Nordita, Stockholm, Sweden
2015 2 weeks at UC Berkeley, USA

2013-2024	multiple several-weeks visits to the Institute of Astronomy and Astrophysics, Tuebingen University, Germany
2017-22	multiple visits to Space Research Institute, Moscow, Russia
2005, 2006, 2007	multiple 3-months visits to the Max-Planck Institute for Astrophysics (MPA), Garching, Germany
2004–2005	2 months at the INTEGRAL Science Data Centre, Versoix, Switzerland

Memberships

2019–	European Astronomical Society (EAS)
2015–	Finnish Astronomical Society (FAS)
2014–	Turku Collegium for Science and Medicine
2012–	International Astronomical Union

Awards and recognitions

2024	Bruno Rossi Prize of the High Energy Astrophysics Division of the American Astronomical Society (as part of the IXPE science team)
2023	Friedrich Wilhelm Bessel Research Award from the Alexander von Humboldt Foundation
2023	Distinguished Science Award, National Space Club, Huntsville, USA (as part of the IXPE science team)
2014	Fellowship awarded by The Turku Collegium for Science and Medicine
2008	The Medal of Russian Academy of Sciences in the Field of Physics for young scientists
2004, -05, -07, -09, -21	The Annual Prize of Space Research Institute (Moscow, Russia) for the best publication
2005	The Moscow government prize to the best PhD students

Research-related professional service

2024	member of the evaluation committee for the future High Energy Astrophysics mission led by IHEP beyond 2030 (China)
2024	SOC member at the COSPAR event "High Mass X-ray Binaries: A new view on Accretion and Reprocessing" (Busan, 2024)
2023	Section editor in the "Handbook of X-ray and Gamma-ray Astrophysics" (Editors in chief: C. Bambi and A. Santangelo)
2022–	Scientific Collaborator for IXPE project
2022–	Member of European Consortium for Astroparticle Theory (EuCAPT)
2021–	Member of eXTP consortium
2020	Referee for the M.Sc. thesis of Sergey Bykov at HSE, Moscow (June 2020)
2020	SOC member of EAS-2020, Leiden, The Netherlands, June 2020
2019–	Member of working groups 2,3,5,6 in THESEUS mission
2019	Opponent for the Licentiate thesis defence of PhD student Dennis Alp at KTH, Stockholm (14.02.2019)
2018–	Scientific Participant for IXPE project
2018	SOC member in "ULX pulsars" workshop at ESAC, Madrid, 3-6 June 2018
2018	LOC member in the "Astronomers Days 2018" conference, Kuusamo, Finland, 28-30 May 2018
2017–	Finnish representative, EU COST Action CA16214, "The multi-messenger physics and astrophysics of neutron stars"
2017–	Finnish representative, EU COST Action CA16104, "Gravitational waves, black holes and fundamental physics"
2017–	Organizer of the Astronomy seminars at the Tuorla Observatory
2016–	Member of the XIPE working group "Magnetic fields in compact objects"
2015–2017	Organizer of the Journal Club at the Tuorla Observatory
2016	LOC member in the "Astronomers Days 2016", Tampere, Finland, May 2016

2015–	Vice-president of the Finnish Astronomical Society
2015	LOC member of the Workshop on Relativistic Astrophysics, Turku, Finland, August 2015
2015	Panel member on stellar evolution, ESO Observing Programmes Committee (Periods 96-97)
2014–2017	Substitute of Finnish representative, EU COST Action MP1304, “Exploring fundamental physics with compact stars”
2014–	OPTICON time allocation committee - external reviewer
2013	Co-organizer of Symposium on the physics of neutron stars, EWASS 2013, Turku, Finland
2011–2012	Panel member on compact objects, INTEGRAL observatory time allocation committee
2008–	Referee for a number of articles in MNRAS, Science, Nature Astronomy, Astronomy & Astrophysics, Astrophysical Journal, New Astronomy, Astronomy Letters, Astrophysics and Space Science, Advances in Space Research

Mentoring / Teaching related service

Teaching

Courses prepared from scratch and given at University of Turku: (i) Nuclear and particle physics (FFYS7091); (ii) Observational X-ray and gamma-ray astrophysics (TAHT7057, TAHT7058)

Courses (or parts) given at Universities of Oulu and Turku: Stellar structure and evolution, High energy astrophysics, Introduction to astronomy, Observational astrophysics and data analysis, Astronomical data analysis with computers.

Summer/winter schools: (i) Summer school on Instruments and detection techniques in high-energy astrophysics (Course on imaging in X-ray astronomy; August 2012, Savonlinna, Finland); (ii) Summer school on “Relativistic astrophysics” (lectures on observations, magnetized NSs, practical works; August 2018, Turku, Finland); (iii) Summer school on “Astronomy from space” (April 2023, Petnica, Serbia).

Supervised doctoral, master’s and bachelor’s dissertations

PhD dissertations:

2024–present	Alexander Salganik, University of Turku (ST as the main supervisor)
2022–present	Sofia Forsblom, University of Turku (ST as the main supervisor)
2021–present	Anna Bobrikova, University of Turku (ST as a co-supervisor)
2019–present	Vadim Kravtsov, University of Turku (ST as a co-supervisor)
2017– 11.2022	Armin Nabizadeh, University of Turku (ST as the main supervisor ; Väisälä prize 2024 for the best Finnish Astronomy thesis)
2017– 10.2022	Juhani Mönkkönen, University of Turku (ST as the main supervisor)
2016– 10.2021	Iliia Kosenkov, University of Turku (ST as a co-supervisor)
2017– 2020	Tuomo Salmi, University of Turku (ST as a co-supervisor)
2015– 09.2019	Anna Chashkina, University of Turku (ST as a co-supervisor)
10.2015	Alexander Mushtukov, University of Turku (ST as a co-supervisor; best thesis prize of the UTU grad.school in physics and chemistry PCS)

MSc dissertations:

06.2024	Alexander Salganik, St Petersburg University (ST as the main supervisor)
06.2024	Andis Polaks, Uppsala University (ST as a co-supervisor)
06.2022	Sofia Forsblom, University of Turku (ST as the main supervisor)
04.2022	Julien Abou, University of Turku (ST as the main supervisor)
05.2017	Juhani Mönkkönen, University of Turku (ST as the main supervisor)
12.2014	Teppo Heikkilä, University of Turku (ST as a co-supervisor)

BSc dissertations:

03.2024	Vilho Virtanen, University of Turku (ST as the main supervisor)
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04.2023	Silja Kanto, University of Turku (ST as the main supervisor)
05.2020	Linda Kallio-Kujala, University of Turku (ST as the main supervisor)
05.2014	Miika Pursiainen, University of Oulu (ST as the main supervisor)

External research funding

Humboldt Foundation	45000 Eur (award; 2023)
Academy of Finland	11000 Eur (visiting grant; 2022-2023)
AHEAD (Integrated Activities in the High Energy Astrophysics Domain)	2000 Eur (visiting grant; 2022)
Academy of Finland	13000 Eur (visiting grant; 2020-2021)
European Cooperation in Science and Technology	1850 Eur (visiting grant; 2019)
Academy of Finland	9000 Eur (visiting grant; 2019-2020)
Väisälä Foundation	7300 Eur (visiting grants; 2019-2023)
European Cooperation in Science and Technology	900 Eur (visiting grant; 2018)
Academy of Finland	9000 Eur (visiting grant; 2017-2018)
European Cooperation in Science and Technology	1000 Eur (visiting grant; 2017)
AHEAD (Integrated Activities in the High Energy Astrophysics Domain)	2000 Eur (visiting grant; 2017)
European Cooperation in Science and Technology	1700 Eur (visiting grant; 2016)
European Cooperation in Science and Technology	1300 Eur (visiting grant; 2015)
Turku Collegium for Science and Medicine	20kEur (research grant; 2014-2017)

Accepted observational proposals during last 7 years

- PI of NICER (72 ks) observations of V 0332+53 or 4U 0115+63 (2023) + 72 ks in 2024
- Co-I of INTEGRAL (750 ks) monitoring of PSR B1259-63 (2024)
- Co-I of IXPE (360 ks) observations of 4U 1538-52 (2024)
- Co-I of IXPE (250 ks) observations of 4U 1907+09 (2024)
- Co-I of IXPE (300 ks) observations of Cyg X-1 (2024)
- PI of IXPE (150 ks) observations of EXO 2030+375 (2022)
- PI of IXPE (85+100 ks) observations of GRO J1008-57 (2022)
- PI of IXPE (70+170 ks) observations of Cen X-3 (2022)
- PI of ~ 40 SWIFT/XRT TOO proposals (2013-2022)
- PI of the NOT proposal "Unveiling the nature of Galactic HMXBs. Towards the complete sample". Total granted time is 8.5 h (2021)
- PI of XMM-Newton (375 ks) proposal "Quiescent state of accretion-powered magnetized neutron stars" (2021)
- Co-I of XMM-Newton (44 ks) proposal "Unveiling the nature of optically-selected X-ray transients revealed by ART-XC" (2021)
- PI of NuSTAR (40 ks) and XMM-Newton (25 ks) TOO observations of XRP SXP1062 (2019)
- PI of the joint INTEGRAL+XMM-Newton proposal for studies of the accreting millisecond pulsars. Total granted time is 390 ks (2018)
- PI of the NuSTAR proposals for studies of A 0535+262. Total granted time is 60 ks (2018)
- PI of the NuSTAR proposals for studies of IGR J19294+1816. Total granted time is 40 ks (2018)
- Co-I of the XMM-Newton proposal for studies of RX J0812.4+3114. Total granted time is 63 ks (2018)
- Co-I of the XMM-Newton proposal for studies of GRO J1744-28. Total granted time is 52 ks (2018)
- PI of the NOT proposal "Monitoring of PSR J2032+4127 during periastron passage". Total granted time is 19 h (2017)
- PI of the joint INTEGRAL+NuSTAR+XMM-Newton proposal for studies of the accreting millisecond pulsars. Total granted time is 300 ks (2017)
- PI of the NuSTAR proposals for studies of GS 1843-02. Total granted time is 35 ks (2017)
- PI of the NOT proposal "Multiwavelength campaign on Gamma-Ray Loud Binaries". Total granted time is 3 nights (2017)

Talks (invited or contributed) during last 8 years

- 06.2024 Seminar “Polarized emission from accreting neutron stars as seen by the IXPE observatory” at the Max Planck Institute for Radio Astronomy (Bonn, Germany)
- 06.2024 Conference “Continuous Gravitational Waves and Neutron Stars”, Hannover, Germany (**invited**)
- 02.2024 Seminar “Polarized emission from X-ray pulsars as seen by the IXPE observatory” at the Hebrew University of Jerusalem
- 01.2024 Conference “Unveiling the Dynamic and Energetic Universe with Insight-HXMT for Six Years and Beyond”, Zhuhai, China (**invited**)
- 07.2023 Seminar “Polarized emission from X-ray pulsars as seen by the IXPE observatory” at the University of Tübingen
- 06.2023 Several seminars at the University of Tel-Aviv, University of Beer Sheva, Hebrew University
- 11.2022 Seminar “Polarized emission from X-ray pulsars as seen by the IXPE observatory” at the University of Southampton (**invited**)
- 10.2022 “X-ray pulsars at low mass accretion rates”, Darmstadt, conference “INTEGRAL 20 years”
- 10.2021 Tuorla-Tartu annual meeting 2021, Turku (**invited**)
- 06.2020 Seminar at Tel Aviv University (**invited**)
- 06.2019 EWASS, “From X-ray pulsars to pulsating ULXs: Accretion onto highly magnetized neutron stars”, Lyon (**invited**)
- 04.2019 “X-ray topics in Astronomy: from history to the future”, Tübingen (**invited**)
- 02.2019 Seminar at the Leiden University, The Netherlands
- 09.2018 “Stars, planets and their magnetic fields”, St. Petersburg (**invited**)
- 08.2018 “Time for accretion”, Sigtuna (**invited**)
- 05.2018 Astronomers’ Days, Kuusamo
- 03.2018 “Physical Days 2018”, Turku
- 12.2017 “High Energy Astrophysics - 2017”, Moscow (**invited**)
- 09.2017 “Be/X-ray binary workshop (BEXRB2017)”, Heraklion
- 08.2017 “Joint Workshop on Compact Objects (JWCO)”, Istanbul (**invited**)
- 07.2017 “Physics of Neutron Stars – 2017”, St. Petersburg
- 03.2017 Annual NewCompStar Conference, Warsaw
- 02.2017 Seminar at the Stockholm University, Stockholm
- 12.2016 “High Energy Astrophysics - 2016”, Moscow
- 10.2016 “Gamma-Ray Astrophysics in Multi-Wavelength Perspective”, Amsterdam
- 07.2016 “Astrophysikalisches Kolloquium” at the Institute of Astronomy and Astrophysics, Tübingen
- 05.2016 Astronomers’ Days, Tampere
- 04.2016 Annual NewCompStar Conference, Istanbul
- 03.2016 Nordita workshop on accretion onto magnetized neutron stars, Stockholm

Public outreach

- 06.2023 INTEGRAL picture of the month on RX J0440.9+4431. ESA portal
- 10.2022 Getting grips on a strongly magnetized neutron star geometry. Mass media
- 12.2019 Discovery of a Pulse-phase-transient Cyclotron Line in the X-Ray pulsar GRO J2058+42. Mass media
- 11.2016 X-ray pulsars fade as propeller effect sets in. Mass media
- 11.2016 Public lecture for schoolkids at the Tuorla Planetarium
- 01.2016 Kaksoisjärjestelmästä paljastui magnetar. Tähdet ja avaruus
- 10.2012 Supernova synnytti radioaktiivista titaania. Tähdet ja avaruus
- 10.2012 Radioactive decay of titanium powers supernova remnant. ESA press release

- 08.2012 The INTEGRAL view of the Galaxy. Integral Picture of the Month; HEASARC Picture of the week; A&A cover page; press-releases at the Universities of Oulu and Turku
- 04.2012 Discovery of a cyclotron absorption line in the persistent Be/X-ray pulsar RX J0440.9+4431. Integral Picture of the Month
- 05.2011 Annihilating Positrons in the Galactic Centre Region. Integral Picture of the Month
- 08.2010 INTEGRAL completes the deepest all-sky survey in hard X-rays. ESA Science & Technology
- 07.2010 The Hard X-ray Milky Way. Integral Picture of the Month

Publications

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300 scientific publications (210 refereed, 24 of which as the first author) including several in Nature, Science and Nature Astronomy, with around 6600 citations, and resulting *H-index of 42* on the 1st September 2024 according to the NASA ADS.