

Serguei Vorobyov – curriculum vitae

Personal details

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- h-index: 49 (Scopus/Web of Science), 60 (INSPIRE)
- Language skills: English, French, German, Russian, Slovenian

Main areas of research

- **Very-high energy (VHE) gamma-ray astronomy** – as a member of the CAT, H.E.S.S. and CTA collaborations involved in the astrophysical VHE γ -ray data analysis (studies of energy spectra, angular distribution, temporal variability of astrophysical VHE γ -ray sources) and interpretation (nature of VHE γ -ray emission, underlying particle acceleration mechanisms, constraints from the multi-wavelength data); shower and detector simulation; detector calibration and monitoring; R&D of the camera front end electronics for the Cherenkov Telescope Array (NECTAr project)
- **Ultra-high energy (UHE) cosmic rays (CR)** – as a member of the Pierre Auger collaboration involved in the cosmic ray data analysis (UHECR composition, arrival distribution, energy spectrum) and interpretation (models of UHECR origin and propagation); simulation of atmospheric showers, detector simulation; primary CR particle reconstruction; detector calibration and monitoring; exploitation of low energy modes of the Pierre Auger Observatory for studies of astrophysical transients

Academic career and positions

Degrees and habilitation

- Associate professor of physics, University of Nova Gorica, Slovenia (UNG Decision 101-3/2019)
- Assistant professor of physics, University of Nova Gorica, Slovenia (UNG Decision 67-3/2014)
- PhD in physics, *Observations of the Crab Nebula from 1996 to 2002 by the Atmospheric Cherenkov Telescope CAT and implementation of a new analysis method applicable to atmospheric showers*, École polytechnique, Palaiseau, France (2004)
- Diploma in physics, Lomonosov Moscow State University, Russia (1993)

Employment

- Center for Astrophysics and Cosmology, University of Nova Gorica, Slovenia (since 2014)
- DESY-Zeuthen and Berlin Humboldt University, Germany (research associate, 2011-2013)
- LPTA (now LUPM), Université de Montpellier II & IN2P3/CNRS, Montpellier, France (ANR-funded research associate, 2009-2011)
- Laboratory for Astroparticle Physics, University of Nova Gorica, Slovenia (postdoctoral associate, 2007-2009)
- PCC, Collège de France (now APC laboratory), Paris, France (CNRS postdoctoral researcher, 2004-2006)
- École polytechnique, Palaiseau, France (postdoctoral associate, 2004)
- LLR, École polytechnique, Palaiseau, France (research assistant, 2000-2004)
- Tien-Shan Cosmic Ray Station of the Lebedev Physical Institute, Almaty, Kazakhstan (research associate, responsible of the VHE γ -ray research group, 1993-1999)

Other positions and appointments

- Member of the Speaker's and Publication Office of the CTA consortium (since 2019)
- Member of the Senate of the School of Science, University of Nova Gorica (since 2015)
- Member of Consortium Board of the Cherenkov Telescope Array consortium (since 2014)
- President of the Commission for Studies of the School of Science, University of Nova Gorica (since 2019, member of the Commission since 2015)
- Member of the evaluation committees in charge of awarding with the European mention of doctoral dissertations: by Dr. Ignacio Vegas Azcárate (2015, title *Nanosecond range pulse generators for quality control and diagnosis of Cherenkov telescope cameras*); by Dr. Pedro Antoranz Canales (2010, title *Contributions to the high frequency electronics of MAGIC II Gamma Ray Telescope*), University Complutense, Madrid, Spain
- Member of the evaluation committees of master theses: by MSc. Miha Živec (2019, title *Space weather research with the Pierre Auger Observatory*); by MSc. Aleš Bogovič (2017, title *SiPM as light detector in Cherenkov telescopes cameras at CTA*), University of Nova Gorica, Slovenia

International research collaboration

- Member of [the CTA consortium](#) (2009 – present); since 2014 – representative of Slovenia in the CTA consortium and member of the CTA Consortium Board
- Member of [the Pierre Auger collaboration](#) (2004-2009, 2014 – present)
- Member of the NECTAr consortium (2009-2011)
- Member of the H.E.S.S. collaboration (2009-2011)
- Member of the CAT collaboration (2000-2004)

Most important funded research projects

Acronym	Title	Role	Time	Agency	EUR
N1-0111	Identification of cosmic ray sources amongst jetted active galaxies	PI	2019-2022	FWF, ARRS	223k
J1-9146	New atmospheric monitoring devices and techniques for Imaging Atmospheric Cherenkov telescopes	R	2018-2021	ARRS	300k
P1-0031	Astroparticle physics	R	2015-2021	ARRS	1.450k
NeCTAr	Démonstrateur d'élément modulaire de caméra pour CTA	R	2009-2011	ANR	346k
CTA	Cherenkov Telescope Array, ESFRI Landmark Status Project	R	2017-		550k
SciFe	Science for Life, Horizon 2020, Marie Skłodowska-Curie actions	R	2016-2017		20k
Total					2.9M

All the projects listed were peer-reviewed. Abbreviations: ESFRI - European Strategy Forum on Research Infrastructures, Horizon 2020 - the EU Framework Programme for Research and Innovation, ARRS - Slovenian Research Agency, FWF - FWF Der Wissenschaftsfonds, Austria, ANR - Agence Nationale de Recherche, France, PI - principal investigator, R - researcher on the project. The amount of funding denotes the funding received by the University of Nova Gorica.

Student supervision

- Dr. Lukas Zehrer, University of Nova Gorica, ARRS-funded PhD thesis with the title *Application of machine learning techniques for cosmic ray event classification and implementation of a real-time ultra-high energy photon search with the surface detector of the Pierre Auger Observatory*, defended on September 27, 2021, **mentor** (2017-2021).
- Dr. Ahmed Saleh, University of Nova Gorica, ARRS-funded PhD thesis with the title *Studies of astrophysical very-high energy gamma-ray emission with the Pierre Auger Observatory*, defended on February 9, 2017, **mentor** (2014-2017), together with prof. dr. Danilo Zavrtanik
- MSc. Lucia Ambrogi (2011), DESY-Zeuthen 2011 Summer School, Report on the subject *Impact of the geomagnetic field on the angular resolution of Imaging Atmospheric Cherenkov Telescopes*, **supervisor** (2011)
- Dr. Mustafa Hussain (2009), University of Nova Gorica, doctoral thesis with the title *Ultra-high energy cosmic rays and galactic magnetic field*, **co-supervision** (2007-2009), mentor prof. dr. Danilo Zavrtanik
- Dr. Gilles Maurin (2005), University Paris VII, doctoral thesis with the title *Étude de la nature des rayons cosmiques d’ultra haute énergie à partir des premières données de l’Observatoire Pierre Auger*, **co-supervision** (2004-2005), mentor dr. Jean-Michel Brunet

Teaching record

- 2016-2022, *Modern experimental methods in astroparticle physics*, Graduate school, University of Nova Gorica.
- 2016-2022, *Mathematical physics II*, School of science, University of Nova Gorica
- 2016-2022, *Mathematical physics I*, School of science, University of Nova Gorica
- 2016-2017, *Experimental methods and detectors in high-energy astrophysics*, School of science, University of Nova Gorica
- 2014-2016, *Quantum field theory*, School of applied sciences, University of Nova Gorica
- 2014-2016, *Experimental methods and detectors II*, School of applied sciences, University of Nova Gorica
- 2010-2011, *Ultra-high energy cosmic rays*, University of Montpellier 2
- 2008-2009, *Electrodynamics*, School of applied sciences, University of Nova Gorica
- 2007-2009, *Quantum mechanics*, School of applied sciences, University of Nova Gorica

Memberships in scientific societies

- Member of the International Astronomical Union – IAU
- Member of the Slovenian Society for Mathematics, Physics and Astronomy – DMFA
- Member of the European Astronomical Society – EAS

Outreach

- 2016 and 2017, *European Researchers’ Night (ERN)*, Horizon 2020 Framework Programme of the European Union, Marie Skłodowska-Curie actions, Grant Agreement no. 722990 with [SciFe consortium](#), – coordinator of the planning and execution of the ERN’s Work Package 2 (Event program) activities in Nova Gorica, Slovenia.
- 2010-2011, *Cosmic wheel*, program of cosmic rays popularisation for school students, France
- 2005-2006, *RELYC*, program of cosmic rays popularisation for school students, France