

Nikolina (Niko) ŠARČEVIĆ

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Croatian and Serbian Citizen

EDUCATION

- 2017 **Master of Science in Astrophysics, ASTROMUNDUS MASTER COURSE, Joint Degree**
2014
 > University of Innsbruck, AT, 1st semester
 > University of Padua, IT, 2nd and 4th semester
 > University of Goettingen, DE, 3rd semester
 > Thesis done under supervision of prof. Alberto Franceschini and Simona Paiano, PhD
 > Thesis title : **Population of Gamma-ray Sources in the Third Fermi-LAT Catalogue**
Cosmology High Energy Astrophysics Stellar Physics String Theory Particle Detectors Spectroscopy
- 2014 **Graduate Astronomer, UNIVERSITY OF NOVI SAD, RS**
2005
 > Equivalent to BSc+1 year
 > Thesis done under supervision of prof. Miodrag Krmar
 > Thesis title : **Research of Photoneutron Energy Spectrum by ¹¹⁵In Activation**
Special Relativity General Relativity Nuclear Physics Cosmology Nuclear Medicine General Physics

PROFESSIONAL EXPERIENCE

- 2024 expected
September 2020 **Postgraduate Researcher, NEWCASTLE UNIVERSITY, UK**
 > Mitigating theoretical uncertainties for weak lensing and galaxy clustering cosmology
late time cosmology weak lensing statistics large scale structure modelling gravity
- June 2020
November 2019 **Researcher, UNIVERSITY OF FREIBURG, Germany**
 > Preparing a low-background experiment
 > Detector, shielding, muon veto, DAQ, support structure design and setup
 > Setup to be used for the advanced student lab
NaI detector Radiation Shielding Muon Veto Scintillator DAQ
- November 2019
October 2017 **Researcher, UNIVERSITY OF FREIBURG, Germany**
 > Electric field simulations for XENONnT
 > R&D of the field cage of the detector
 > Design of the field shaping elements
 > Research on problematic regions inside the TPC
 > Electric field optimization
 > Detector stability testing in terms of electric fields
TPC R&D XENON Dark Matter Electric Field Simulations Electrodes FEM

TEACHING, MENTORING, AND SUPERVISION

- 2021 **Astrophysical Fluid Dynamics**| Marking and assessment, Master course, *Teaching Assistant*, Newcastle University
- 2021 **Algebra Multivariable Calculus & Differential Equations**| Teaching, marking and assessment, Undergrad course, *Teaching Assistant*, Newcastle University
- 2021 **Laboratory Physics 1 | Radioactivity**, Undergrad course, *Lab Assistant*, Newcastle University
- 2021 **Advanced Quantum & Atoms Molecules Nuclei & Particles | Marking and assessment**, Undergrad course, *Teaching Assistant*, Newcastle University
- 2020 **Methods for Differential Equations & Partial Differential Equations & Non-Linear Waves | Marking and assessment**, Undergrad course, *Teaching Assistant*, Newcastle University
- 2020 **Linear Analysis & Topology**| Marking and assessment, Undergrad course, *Teaching Assistant*, Newcastle University
- 2020 **Laboratory Physics 1 | Radioactivity**, Undergrad course, *Lab Assistant*, Newcastle University
- 2020 **Fortgeschrittenen Praktika II | Raman Effect**, Master course, *Lab Assistant*, University of Freiburg
- 2019 **Efficiency Studies for the MonXe Randon Emanation Chamber**, L. God, *Bachelor thesis co-supervisor*
- 2019 **Fortgeschrittenen Praktika I | I₂ Spectroscopy**, Undergrad course, *Lab Assistant*, University of Freiburg
- 2019 **Experimental Physik II**, Undergrad course, *Tutor*, University of Freiburg
- 2018 **Physiklabor für Fortgeschrittene | Hanle Effect**, Undergrad course, *Lab Assistant*, University of Freiburg
- 2018 **Astroparticle Physics**, Master course, *Tutor*, University of Freiburg

JOURNAL ARTICLES

- [1] E. Aprile *et al.*, ²²²Rn emanation measurements for the XENON1T experiment, (2020)
- [2] E. Aprile *et al.*, Projected WIMP Sensitivity of the XENONnT Dark Matter Experiment, (2020)
- [3] E. Aprile *et al.*, Observation of Excess Electronic Recoil Events in XENON1T, (2020)
- [4] E. Aprile *et al.*, Energy resolution and linearity in the keV to MeV range measured in XENON1T, (2020)
- [5] E. Aprile *et al.*, Search for Light Dark Matter Interactions Enhanced by the Migdal Effect or Bremsstrahlung in XENON1T, *Phys.Rev.Lett.* 123 (2019) no.24, 241803, arXiv:1907.12771
- [6] E. Aprile *et al.*, Light Dark Matter Search with Ionization Signals in XENON1T, *Phys.Rev.Lett.* 123 (2019) no.25, 251801, arXiv:1907.11485
- [7] E. Aprile *et al.*, XENON1T Dark Matter Data Analysis : Signal Reconstruction, Calibration and Event Selection, *Phys.Rev.D* 100 (2019) no.5, 052014, arXiv:1906.04717
- [8] E. Aprile *et al.*, The XENON1T Data Acquisition System, *JINST* 14 (2019) no.07, P07016, arXiv:1906.00819
- [9] E. Aprile *et al.*, Observation of two-neutrino double electron capture in ¹²⁴Xe with XENON1T, *Nature* 568 (2019) no.7753, 532-535, arXiv:1904.11002
- [10] E. Aprile *et al.*, XENON1T dark matter data analysis : Signal and background models and statistical inference, *Phys.Rev.D* 99 (2019) no.11, 112009, arXiv:1902.11297
- [11] E. Aprile *et al.*, Constraining the spin-dependent WIMP-nucleon cross sections with XENON1T, *Phys.Rev.Lett.* 122 (2019) no.14, 141301, arXiv:1902.03234
- [12] E. Aprile *et al.*, First results on the scalar WIMP-pion coupling, using the XENON1T experiment, *Phys.Rev.Lett.* 122 (2019) no.7, 071301, arXiv:1811.12482

BOOKS

- Current project M.Krmar **Viši Kurs Nuklearne Fizike (working title)**. Proofreader | Editor-in-chief | Prepress.
- 2013 M.Krmar. **Uvod u Nuklearnu Fiziku**. *Univerzitet u Novom Sadu*. Proofreader | Editor-in-chief | Prepress. ISBN 978-86-7031-250-0
- 2010 L.Marinkov. **Osnovi Nuklearne Fizike**. *Univerzitet u Novom Sadu*. Proofreader | Editor | Prepress. ISBN 978-86-7031-191-6

</> SKILLS

OS	Linux, macOS, Windows
Programming	Python, MATLAB, XMDS2
Astro Software	SAOImageDS9, IRAF, Period04, TOPCAT
WP	LaTeX, OpenOffice, MS Word
Physics Simulations	COMSOL Multiphysics®
Misc	HTML, Autodesk®Inventor, Adobe InDesign®
Languages	English, Croatian, Serbian

☀ CONFERENCES, SCHOOLS, AND WORKSHOPS

Jan 2021	IV ICTP-SAIFR School on Cosmology : Challenges for the Standard Cosmological Model Virtual Participant
Jan 2021	STFC Introductory Course in Astronomy for New Research Students Virtual Participant
Jan 2021	DEX XVII : 17th Durham-Edinburgh eXtragalactic Workshop Virtual Participant
Dec 2020	Latin American Workshop on Observational Cosmology Virtual Participant
Dec 2020	Workshop on New Trends in Dark Matter Virtual Participant
Dec 2020	3rd South American Dark Matter Workshop Virtual Participant
Oct 2020	3rd Global 21-cm Workshop Virtual Participant
Sep 2020	UK Cosmology Meeting, Virtual Participant
Sep 2020	Cosmological Correlators Virtual Participant
Jun 2020	European Astronomical Society Annual Meeting, University of Leiden, NL Virtual Participant
Jun 2020	H_0 : Assessing Uncertainties in Hubble's Constant Across the Universe, ESO, DE Virtual Participant
Jun 2019	Patras Workshop on Axions, WIMPs and WISPs, University of Freiburg, DE Participant
Mar 2019	DPG-Frühjahrstagung, Talk : Electric Field Simulations for XENONnT [☞] , RWTH Aachen, DE Speaker
Sept 2018	RTG Fall Workshop, Poster talk : Electric Field Simulations for XENONnT [☞] , Hornberg, DE Speaker
Mar 2018	Photosensors and Signal Processing in Particle Detectors, PRISMA Detector Lab, JGU Mainz, DE Participant
Sep 2017	Compact Objects & Gravitational Waves, IMPRS-HD, Heidelberg, DE Participant
Jun 2017	IDPASC School on Astrophysics, Cosmology, Astroparticles and Particle Physics, Asiago, IT Participant
Sep 2015	European Radio Interferometry School, ESO, Garching, DE Participant
May 2014	Sarajevo School of High Energy and Medical Physics, Talk : Research of Photoneutron Energy Spectrum by ¹¹⁵ In Activation [☞] , University of Sarajevo, BA Presenter
May 2014	Amaterska i Profesionalna Astronomija Srbije, Talk : Report on the Success of the Novi Sad School on Astronomy, Novi Sad, RS Presenter
Apr 2014	7 th Student Astronomy Workshop, Talk : Report on Student Workshop at Vidojevica Observatory [☞] , Astronomical Observatory, Belgrade, RS
Aug 2013	Petnica School on Cosmology, Petnica Science Institute, RS
Jul 2013	Student Astronomy Practice, Vidojevica Observatory, RS
Apr 2013	6 th Student Astronomy Workshop, Talk : Design and Working Principle of LINACs [☞] , University of Novi Sad, RS
Jun 2009	3 rd Student Astronomy Workshop, Astronomical Observatory, Belgrade, RS

OUTREACH AND VOLUNTEERING

2020-present	EuCAPT Contributor , Helping the organization with outreach within the astroparticle community
2020-present	UK Cosmo Social Media team member , UK Cosmo on Twitter
2020	Astrobites Contributor , Future Contributor for Serbian and Croatian
2020-present	Cosmology from Home Organizer , Online conference on cosmology
2020	CosmoConβ Organizer , Online conference on cosmology
2019-2020	XENON Collaboration Social Media team member , XENON on Twitter, XENON on Facebook
2017	Novi Sad School on Astronomy Coordinator and Lecturer , ADNOS, Novi Sad, Serbia
2016	Novi Sad School on Astronomy Coordinator and Lecturer , ADNOS, Novi Sad, Serbia
2014	Summer Science Factory Mentor , Čakovec, Croatia
2014	Youth Science Camp Mentor , Tičan Observatory, Croatia
2014	6th Science Festival Workshop Coordinator , University of Novi Sad, Serbia
2013	Sinj Festival of Science Guest Lecturer , Sinj, Croatia
2013	Astronomski Magazin Freelance Writer , Novi Sad, Serbia
2013	Novi Sad School on Astronomy Coordinator and Lecturer , ADNOS, Novi Sad, Serbia
2013	Days of Astronomy Project Founder and Lecturer , ADNOS, Novi Sad, Serbia
2013	Khan Academy Translator , Khan Academy Serbia
2013	5th Science Festival Educator , University of Novi Sad, Serbia
2012	Researchers' Night Educator , University of Novi Sad, Serbia
2012	4th Science Festival Educator , University of Novi Sad, Serbia
2009	1st Science Festival Educator , University of Novi Sad, Serbia
2005-2017	Astronomical Society Novi Sad Lecturer, Supervisor , ADNOS, Novi Sad, Serbia

SCHOLARSHIPS AND SPONSORSHIPS

2017	IDPASC School, Sponsorship by INFN and University of Padova
2014-2017	AstroMundus Master Course, Full Scholarship by the EU
2014	Sarajevo School of High Energy and Medical Physics, Sponsorship by University of Sarajevo
2013	Petnica School of Cosmology, Sponsorship by by ETH Cosmology Zurich, ICTP Trieste and SISSA Trieste
2013	Student Astronomy Workshop by Astronomical Observatory Belgrade

MEMBERSHIPS

2021-Present	LSST DESC : UK Junior Associate
2020-Present	European Astronomical Society
2020-Present	Royal Astronomical Society, UK
2018-2021	Deutsche Physikalische Gesellschaft, Germany
2017-2019	XENON Collaboration
2014-Present	Society of Astronomers of Serbia, Serbia
2005-Present	Astronomical Society Novi Sad "ADNOS", Serbia

INDEPENDENT COURSEWARE, CERTIFICATES, AND TITLES

IELTS, academic, overall score 7.5
From the Big Bang to Dark Energy, University of Tokyo @Coursera
Analyzing the Universe, Rutgers University @Coursera
Confronting the Big Questions : Highlights of Modern Astronomy, University of Rochester @Coursera
Introduction to Forensic Science, University of Leicester @FutureLearn
Dino 101 : Dinosaur Paleobiology, University of Alberta @Coursera
Scandinavian Film and Television, University of Copenhagen @Coursera
Warhol, University of Edinburgh @Coursera
Dental Techician, Medicinska Škola, Šabac, Serbia