

# 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, 1<sup>st</sup> semester
  - > University of Padua, IT, 2<sup>nd</sup> and 4<sup>th</sup> semester
  - > University of Goettingen, DE, 3<sup>rd</sup> 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 <sup>115</sup>In 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

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- 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 | I<sub>2</sub> 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

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- [1] E. Aprile *et al.*, <sup>222</sup>Rn 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 <sup>124</sup>Xe 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

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- 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

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

## ☀ CONFERENCES, SCHOOLS, AND WORKSHOPS

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- 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<sup>☞</sup>, RWTH Aachen, DE | Speaker
- Sept 2018 **RTG Fall Workshop**, Poster talk : Electric Field Simulations for XENONnT<sup>☞</sup>, 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 <sup>115</sup>In Activation<sup>☞</sup>, 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<sup>th</sup> Student Astronomy Workshop**, Talk : Report on Student Workshop at Vidojevica Observatory<sup>☞</sup>, 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<sup>th</sup> Student Astronomy Workshop**, Talk : Design and Working Principle of LINACs<sup>☞</sup>, University of Novi Sad, RS
- Jun 2009 **3<sup>rd</sup> Student Astronomy Workshop**, Astronomical Observatory, Belgrade, RS

## OUTREACH AND VOLUNTEERING

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

## SCHOLARSHIPS AND SPONSORSHIPS

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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

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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

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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 Technician**, Medicinska Škola, Šabac, Serbia