

Research Interests

My group and I search for traces of new physics in connection with the phenomenology of black holes.

In Brief

29 publications + 5 preprints, $h_{\text{HEP}} = 13$, Ph.D. thesis published in Springer Theses, 3 single-authored honorable mentions in Gravity Research Foundation Essay Competition (2023, 2020, 2018), 42 talks (10 invited), taught 7 graduate courses, \$456,724 of funding from 9 awards/scholarships/fellowships.

Positions

- 2023 – **Junior Group Leader (2.5-year); Young Investigator Group Preparation Program**, *Institute for Theoretical Physics, Karlsruhe Institute of Technology*, Karlsruhe, Germany
Independent prize fellowship researcher with dedicated \$100,000 budget.
- 2020 – 2023 **Postdoctoral Research Associate of Physics**, *High Energy Theory Group, Department of Physics, William & Mary*, Williamsburg, VA, United States

Education

- 2016 – 2020 **Doctor of Philosophy (Ph.D.) in Physics**, *University of Alberta*, Edmonton, Canada
Vanier scholar; CAP Thesis Prize; Faculty of Science Dissertation Award.
- 2015 – 2016 **Master of Science in Physics**, *University of Waterloo*, Waterloo, Canada
Perimeter Scholars International, *Perimeter Institute*, Waterloo, Canada
GPA – PSI program is traditionally not graded.
- 2012 – 2015 **Master of Science in Physics**, *University of Cologne*, Cologne, Germany
GPA – 1.0 (honor's branch)*
- 2009 – 2012 **Bachelor of Science in Physics**, *RWTH Aachen University*, Aachen, Germany
GPA – 1.1 excellent*
- 2000 – 2009 **Abitur**, *Heinrich-Heine Gymnasium*, Oberhausen, Germany
*GPA – 1.0**

*German grading system: 1.0 corresponds to the highest possible grade.

Supervised Group Members

- 2025/01 – Dr. Christoph Borschensky (postdoctoral researcher, 75% position in my group)
Project: Analytical investigations of strong first-order phase transitions
- 2025/03 – B.Sc. Hao Hu (master student)
Project: Microlensing of non-singular black holes with ray tracing
- 2025/05 – Felix Wunsch (bachelor student)
2025/10 Thesis: Quasi-periodic oscillations of compact non-singular objects
- 2025/09 – Marek Hartenfels (bachelor student)
Thesis: Newton's spherical shell theorem in non-singular gravitational field theory

Ongoing Projects

- P3 *Gravitational collapse with a minimal length scale*
J. Boos and A. K. Gündoğdu
- P2 *Galactic microlensing constraints for non-singular black hole models*
J. Boos and H. Hu
- P1 *Analytical investigations of strong first-order phase transitions*
J. Boos and C. Borschensky

Submitted Papers

- S4 *Microlensing of non-singular black holes at finite size: a ray tracing approach* submitted to PRD
2510.10282 [gr-qc]
J. Boos and H. Hu
- S3 *Novel very-high-frequency quasi-periodic oscillations of compact non-singular objects* submitted to JCAP
2510.00986 [gr-qc]
J. Boos and F. Wunsch
- S2 *'Translation invariant' black hole: autoparallels and complete integrability* submitted to PRD
2506.12301 [gr-qc]
J. Boos
- S1 *Torsion in two dimensions: autoparallels, symmetries, and applications to black holes* submitted to AoP
2504.06013 [gr-qc]
J. Boos

Research Papers Published in Peer-Reviewed Journals

- 30 *New models of nonsingular black hole dark matter from limiting curvature* to appear in PRD
2507.18322 [gr-qc]
S. Aşmanoğlu, **J. Boos**, C. D. Carone
- 29 *What happens to topological invariants (and black holes) in singularity-free theories?* PRD **111**, 084063 (2025)
2411.11450 [gr-qc]
J. Boos
- 28 *Note on kilometer-scale ultraviolet regulators and astrophysical black holes* CQG **41**, 157003 (2024)
2311.16319 [gr-qc]
J. Boos, C. D. Carone
- 27 *Regular black hole from a confined spin connection in Poincaré gauge gravity* PLB **848**, 138403 (2024)
2308.13017 [gr-qc]
J. Boos
- 26 *Black hole entropy contributions from Euclidean cores* IJMPD **32**, 2342011 (2023)
2305.06834 [gr-qc]
J. Boos
Honorable mention, 2023 GRF Essay Competition.
- 25 *Asymptotically nonlocal gravity* JHEP **06**, 017 (2023)
2212.00861 [hep-th]
J. Boos, C. D. Carone

- 24 *Asymptotically safe dark matter with gauged baryon number* PRD **107**, 035018 (2023)
J. Boos, C. D. Carone, N. L. Donald, M. R. Musser 2209.14268 [hep-ph]
- 23 *Asymptotic safety and gauged baryon number* PRD **106**, 035015 (2022)
J. Boos, C. D. Carone, N. L. Donald, M. R. Musser 2206.02686 [hep-ph]
- 22 *Asymptotic non-locality in non-Abelian gauge theories* PRD **105**, 035034 (2022)
J. Boos, C. D. Carone 2112.052701 [hep-ph]
- 21 *Asymptotic non-locality in gauge theories* PRD **104**, 095020 (2021)
J. Boos, C. D. Carone 2109.06261 [hep-th]
- 20 *Asymptotic non-locality* PRD **104**, 015028 (2021)
J. Boos, C. D. Carone 2104.11195 [hep-th]
- 19 *Non-singular ‘Gauss’ black hole from non-locality* Universe **11**, 4 (2025)
J. Boos 2104.00555 [gr-qc]
- 18 *Non-locality and gravitoelectromagnetic duality* PRD **104**, 024018 (2021)
J. Boos, I. Kolář 2103.10555 [gr-qc]
- 17 *Effects of non-locality in gravity and quantum theory* Springer Theses (2020)
J. Boos 2009.10856 [gr-qc]
Ph.D. thesis, 234 pages, University of Alberta, 2020.
- 16 *Retarded potential of a uniformly accelerated source in non-local scalar field theory* PRD **103**, 105004 (2021)
J. Boos, I. Kolář 2102.07843 [hep-th]
- 15 *Resonant particle creation by a time-dependent potential in a non-local theory* PLB **816**, 136252 (2021)
J. Boos, V. P. Frolov, A. Zelnikov 2011.12929 [hep-th]
- 14 *Ultrarelativistic charged and magnetized objects in non-local ghost-free electrodynamics* PRD **103**, 045013 (2021)
J. Boos, V. P. Frolov, J. Pinedo Soto 2012.05347 [hep-th]
- 13 *Angle deficit & non-local gravitoelectromagnetism around a slowly spinning cosmic string* IJMPD **29**, 2043027 (2020)
J. Boos 2003.13847 [gr-qc]
Honorable mention, 2020 GRF Essay Competition.
- 12 *Ultrarelativistic spinning objects in non-local ghost-free gravity* PRD **101**, 124065 (2020)
J. Boos, V. P. Frolov, J. Pinedo Soto 2004.07420 [gr-qc]
- 11 *‘Ghost-free modification of the Polyakov action and Hawking radiation* PRD **100**, 104008 (2019)
J. Boos, V. P. Frolov, A. Zelnikov 1909.01494 [hep-th]
- 10 *On thermal field fluctuations in ghost-free theories* PLB **793**, 290 (2019)
J. Boos, V. P. Frolov, A. Zelnikov 1904.07917 [hep-th]

- 9 *Probing the vacuum fluctuations in scalar ghost-free theories* PRD **99**, 076014 (2019)
J. Boos, V. P. Frolov, A. Zelnikov 1901.07096 [hep-th]
- 8 *Premetric teleparallel theory of gravity and its local and linear constitutive law* EPJC **78**, 907 (2018)
Y. Itin, Y. N. Obukhov, J. Boos, F. W. Hehl 1808.08048 [gr-qc]
- 7 *Quantum scattering on a delta potential in ghost-free theory* PLB **782**, 688 (2018)
J. Boos, V. P. Frolov, A. Zelnikov 1805.01875 [hep-th]
- 6 *Gravitational Friedel oscillations in higher-derivative and infinite-derivative gravity?* IJMPD **27**, 1847022 (2018)
J. Boos 1804.00225 [gr-qc]
Honorable mention, 2018 GRF Essay Competition.
- 5 *Gravitational field of p -branes in linearized ghost-free gravity* PRD **97**, 084021 (2018)
J. Boos, V. P. Frolov, A. Zelnikov 1802.09573 [gr-qc]
- 4 *Principal Killing strings in higher-dimensional Kerr–NUT–(A)dS spacetimes* PRD **97**, 084015 (2018)
J. Boos, V. P. Frolov 1801.00122 [gr-qc]
- 3 *Stationary black holes with stringy hair* PRD **97**, 024024 (2018)
J. Boos, V. P. Frolov 1711.06357 [gr-qc]
- 2 *Gravity-induced four-fermion contact interaction implies gravitational intermediate W and Z type gauge bosons* IJTP **56**, 751 (2017)
J. Boos, F. W. Hehl 1606.09273 [gr-qc]
- 1 *Plebański–Demiański solution of general relativity and its expressions quadratic and cubic in curvature: analogies to electromagnetism* IJMPD **24**, 1550079 (2015)
J. Boos 1412.1958 [gr-qc]

Working Papers

- W1 *Kerr principal null directions from Bel–Robinson and Kummer surfaces* 1703.10791 [gr-qc]
J. Boos, A. Favaro

Book Reviews

- R1 Review of “On Gravity: A Brief Tour of a Weighty Subject,” (Princeton University Press, 2018), Physics in Canada, Canadian Association of Physicists, 2019.

Funding

- 2024 – 2025 Young Investigator Group Preparation Program \$100,000
Karlsruhe Institute of Technology & state of Baden–Württemberg, Germany

Awards and Scholarships ($n = 9$, $\Sigma = \$356,724$)

2017 – 2020	Vanier Canada Graduate Scholarship <i>Natural Sciences and Engineering Research Council of Canada</i>	\$166,667
	Golden Bell Jar Graduate Scholarship in Physics <i>University of Alberta</i>	\$90,000
2019	Andrew Stewart Memorial Graduate Prize Graduate Student Travel Award <i>University of Alberta</i>	\$5,000 \$457.78
2017	President's Doctoral Prize of Distinction <i>University of Alberta</i>	\$21,600
2016 – 2017	Dean's Excellence Recruitment Scholarship Award University of Alberta Doctoral Recruitment Scholarship <i>University of Alberta</i>	\$5,000 \$20,000
2015 – 2016	Perimeter Scholars International Award <i>Perimeter Institute for Theoretical Physics</i>	\$30,000
2013 – 2015	Member of Bonn–Cologne Graduate School Honor's Branch <i>University of Cologne</i>	\$18,000

Honors and Distinctions

2023	Honorable Mention, Essay Competition 2023 <i>Gravity Research Foundation</i>	
2021	P. R. Wallace Thesis Prize <i>Canadian Association of Physicists, Division of Theoretical Physics</i> <i>Winnipeg Institute for Theoretical Physics, Canada</i>	\$500
	Springer Thesis Award <i>Springer Nature, Switzerland</i>	\$500
2020	Faculty of Science Doctoral Dissertation Award <i>Faculty of Science, University of Alberta</i> Honorable Mention, Essay Competition 2020 <i>Gravity Research Foundation</i> Semi-finalist prize, Images of Research Competition 2020 <i>University of Alberta</i>	
2019	Finalist, three-minute thesis (3MT) competition <i>Faculty of Graduate Studies and Research, University of Alberta</i>	
2018	Honorable Mention, Essay Competition 2018 <i>Gravity Research Foundation</i> First prize, Annual Symposium for Graduate Physics Research <i>Graduate Physics Student Association, University of Alberta</i> Semi-finalist prize, Images of Research Competition 2018 <i>University of Alberta</i>	\$250
2013	Selected for Dean's List 2013 <i>RWTH Aachen University</i>	

2012 becoMINT graduate prize

Robert Bosch corporation

2009 State distinction for best Abitur[†] graduates

Patron: prime minister of North Rhine-Westfalia, Germany

Manfred Lennings medal for best Abitur[†] grade

Rotary Club Oberhausen

[†]Diploma from German secondary schools qualifying for university admission or matriculation.

Teaching Experience

2025 Advanced Seminar: Black Holes and Gravitational Waves

Weekly M.Sc. seminar, held jointly with Profs. Muehlleitner and Schwetz-Mangold (KIT).

2024 Searching for new physics with gravitational waves: let's build an extreme-mass ratio inspiral waveform generator!

Elective graduate course for advanced PhD students, six lectures, Karlsruhe Institute of Technology, <http://www.spintwo.net/Courses/>

Black Holes 101: A Mini Course

Two-day introduction, Karlsruhe Institute of Technology, <http://www.spintwo.net/Courses/>

2021 PHYS 581: Differential Geometry for Physicists

Graduate course, William & Mary, <http://www.spintwo.net/Courses/>

PHYS 101H: guest lecturer on black hole physics

Undergraduate course, William & Mary

2020 Differential Geometry Student Meetings[‡]

2019 Black Hole Student Meetings[‡]

Conformal Field Theory Student Meetings[‡]

2018 Gauge Theory Student Meetings[‡]

Quantum Field Theory Student Meetings[‡]

Graduate seminars, University of Alberta, <http://www.spintwo.net/Courses/>

2015 Geometry in Physics

Teaching assistant, graduate course, University of Cologne, Prof. Alexander Altland.

2014 Advanced Seminar on General Relativity & Cosmology

General Relativity & Cosmology II

Teaching assistant, graduate course, University of Cologne, Prof. Claus Kiefer.

[‡]Independently organized events outside the department's regular curriculum.

Attended Conferences, Schools, and Workshops

2025 Jiří Bičák Memorial Conference 2025

Charles University, Prague, Czech Republic

Unraveling the new standard model

University of Lisbon, Portugal

DPG (German Physical Society) Spring Meeting

University of Göttingen, Germany

*Institute for Theoretical Physics, Karlsruhe Institute of Technology
Wolfgang-Gaede Str. 1, D-76131 Karlsruhe, Germany*

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- 2024 Hunting for New Physics
University of Lisbon, Portugal
 Black Hole Initiative 7th Annual Meeting
Harvard University, Cambridge, USA
 Primordial Black Holes: Bernard Carr Mini Conference
LIGO, MIT, Cambridge, USA
 Theory Canada 16
University of Waterloo, Waterloo, Canada
 DPG (German Physical Society) Spring Meeting
University of Giessen, Germany
- 2023 Puzzles in the Quantum Gravity Landscape: Viewpoints from Different Approaches
Perimeter Institute for Theoretical Physics, Waterloo, Canada (online participation)
- 2022 Snowmass Theory Frontier Conference
Kavli Institute for Theoretical Physics, UC Santa Barbara, United States (online participation)
- 2022 Bad Honnef Physics School on Black Holes
Physikzentrum German Physical Society, Bad Honnef, Germany
- 2021 16th Marcel Grossmann Meeting
University of Rome (La Sapienza), Italy (online conference)
 Quantum Gravity, Higher Derivatives, and Nonlocality
Tokyo Institute of Technology, Japan (online conference)
- 2020 Nobel Laureate Discussion Panel on “The Greatest Physics Discoveries of the 20th Century”
HAPP Centre, University of Oxford, UK (online participation)
- 2019 25th Saalburg Summer School – Foundations and New Methods in Theoretical Physics
Heigenbrücken, Germany
- 2018 Hundred Years of Gauge Theory
Physikzentrum German Physical Society, Bad Honnef, Germany
 Prospects in Theoretical Physics – From Qubits to Spacetime
Institute for Advanced Study, Princeton, USA
 Joint Canada-Asia Pacific Conf. on General Relativity and Relativistic Astrophysics
University of Alberta, Edmonton, Canada
- 2017 Geometric Foundations of Gravity
University of Tartu, Estonia
 Mathematical Physics and General Relativity Symposium in Honor of Professor Ivor Robinson
University of Texas at Dallas, USA
- 2016 Time in Cosmology
Perimeter Institute for Theoretical Physics, Waterloo, Canada
 Black Holes’ New Horizons
Casa Matemática Oaxaca, Mexico
- 2015 14th Marcel Grossmann Meeting
University of Rome (La Sapienza), Italy
 DPG (German Physical Society) Spring Meeting
Technical University Berlin, Germany

- 2014 569th Wilhelm and Else Heraeus Seminar on Quantum Cosmology
Physikzentrum German Physical Society, Bad Honnef, Germany
 Graduate School “From Classical to Quantum GR: Applications to Cosmology”
University of Sussex, United Kingdom
- 2013 Second Erlangen Fall School on Quantum Geometry
University of Erlangen–Nuremberg, Germany
 Jürgen Ehlers Spring School “Gravitational Physics”
Max Planck Institute for Gravitational Physics, Potsdam, Germany

Talks and Invited Seminars

- Sep 2025 Autoparallels in post-Riemannian geometries
Invited talk, Group for Gravitation, Particles, and Fields, University of Belgrade, Serbia
- May 2025 Autoparallels in post-Riemannian geometries
Jiří Bičák Memorial Conference, Prague, Czech Republic
- Apr 2025 Autoparallels around a Schwarzschild black hole with a GM/r^2 -torsion profile
DPG (German Physical Society) Spring Meeting, Göttingen, Germany
- Jul 2024 Black holes, strings, and particle resonances—an assortment of new physics
Invited talk, particle cosmology group meeting, University of Münster, Germany
- Jun 2024 Can we discover post-Riemannian geometries with extreme-mass ratio inspirals?
Invited talk, MIT Kavli Institute, Cambridge, MA, USA
ITP seminar, KIT, Germany
- May 2024 Kilometer-scale ultraviolet regulators and astrophysical black holes
Theory Canada, University of Waterloo, ON, Canada
- Apr 2024 A rotating black hole beyond general relativity
Invited talk, William & Mary, Williamsburg, VA, USA
- Mar 2024 Kilometer-scale ultraviolet regulators and astrophysical black holes
DPG (German Physical Society) Spring Meeting, Giessen, Germany
- Jan 2022 Asymptotic nonlocality
Invited talk, Van Swinderen Institute, University of Groningen, Netherlands
- Oct 2021 So black holes exist. Now what?
Invited symposium, Department of Physics, William & Mary, United States
- Jul 2021 Ultrarelativistic spinning objects in non-local ghost-free gravity
16th Marcel Grossmann Meeting, University of Rome (La Sapienza), Italy (online talk)
- Jun 2021 Effects of non-locality in gravity and quantum theory
Invited talk, Canadian Association of Physicists (online talk)
- Mar 2021 Regular solutions in weak-field infinite-derivative theories: Green function approach
Invited talk, Tokyo Institute of Technology, Japan (online conference)
 Unexpected features of non-locality: resonant particle production
William & Mary, United States
- Sep 2020 Effects of non-locality in gravity and quantum theory
Ph.D. Defense, University of Alberta, Canada

- Jun 2020 Ultrarelativistic objects in non-local infinite-derivative gravity
Invited talk, William & Mary, United States
- Dec 2019 What is a black hole?
Invited talk, Rotary Club Oberhausen, Germany
- Sep 2019 Black holes and mathematical sandpaper
Graduate research symposium, University of Alberta, Canada
- Aug 2019 Black holes, strings, and hidden symmetries
Invited talk, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, UK
Towards surface charges in spacetimes with curvature and torsion
Invited talk, Université Libre de Bruxelles, Belgium
Non-local “ghost-free” gravity
University of Cologne, Germany
- Apr 2019 An exact Kerr–(A)dS black hole solution with torsion and curvature
Gravity seminar, University of Alberta, Canada
Black holes and Einstein’s end of eternity
3MT Finals 2019, University of Alberta, Canada
- Nov 2018 Quantum-mechanical scattering on a delta potential in ghost-free theory
Gravity seminar, University of Alberta, Canada
- Oct 2018 An exact stationary string configuration attached to a rotating black hole
Graduate research symposium, University of Alberta, Canada
- Jun 2018 Principal Killing strings in higher-dimensional Kerr–NUT–(A)dS spacetimes
JCAPC GRRR 2018, University of Alberta, Canada
- Mar 2018 Linearized short-distance modifications of Einstein’s General Relativity
Graduate weekend, University of Alberta, Canada
- Jan 2018 Cosmic strings in stationary BH geometries: stringy matter, principal Killing strings
Invited talk, University of Cologne, Germany
- Aug 2017 Curvature tensors in a 4D Riemann–Cartan space: decompositions and superenergy
Geometric Foundations of Gravity, University of Tartu, Estonia
- May 2017 The Bel–Robinson tensor as an irreducible piece of the Bel tensor
Mathematical Physics and General Relativity Symposium in Honor of Professor Ivor Robinson, University of Texas at Dallas, USA
- Sep 2016 Quasi-normal modes: what can ringing black holes tell us about quantum gravity?
Symposium for Graduate Physics Research, University of Alberta, Canada
- May 2016 Quasi-normal modes of the BTZ black hole and (2+1)D Poincaré gauge theory of gravity
Invited talk, Black Holes’ New Horizons, Casa Matemática Oaxaca, Mexico
- Mar 2016 Gauge structures in gravity
Gravity seminar, University of Alberta, Canada
- Dec 2015 Poincaré gauge theory and its deformed Lie algebra – mass-spin classification of elementary particles
PSI seminar, Perimeter Institute for Theoretical Physics, Canada

- Nov 2015 Classical aspects of Poincaré gauge theory of gravity
Quantum gravity seminar, Perimeter Institute for Theoretical Physics, Canada
- Sep 2015 Differential forms: from classical force to the Wilson loop
PSI seminar, Perimeter Institute for Theoretical Physics, Canada
- Jul 2015 Plebański–Demiański solution of general relativity and its expressions quadratic and cubic in curvature: analogies to electromagnetism
14th Marcel Grossmann Meeting, University of Rome (La Sapienza), Italy
- Mar 2015 Plebański–Demiański solution of general relativity and its expressions quadratic and cubic in curvature: analogies to electromagnetism
DPG (German Physical Society) Spring Meeting, Berlin, Germany
- Apr 2015 Poincaré gauge theory of gravity — an introduction
Invited talk, BCGS seminar, Physikzentrum German Physical Society, Bad Honnef, Germany
- Feb 2015 Quasi-normal modes of the BTZ black hole with torsion
Gravitation and Relativity seminar, University of Cologne, Germany
- Nov 2014 Second order curvature invariants for the Plebański–Demiański solution
Gravitation and Relativity seminar, University of Cologne, Germany
- Jun 2014 Poincaré gauge theory of gravity
Gravitation and Relativity seminar, University of Cologne, Germany
- Jun 2014 Exterior calculus and Einstein–Cartan theory
Gravitation and Relativity seminar, University of Cologne, Germany
- Aug 2012 Physics inside the Schwarzschild radius
Department for Theoretical Particle Physics, RWTH Aachen University, Germany

Master's Theses

- Title *Symplectic boundary degrees of freedom in Poincaré gauge theory of gravity*
- Supervisors Prof. Lee Smolin & Prof. Laurent Freidel
- Title *Quasi-normal modes of the the BTZ black hole solution of $(2 + 1)$ -dimensional Poincaré gauge theory of gravity*
- Supervisors Prof. Friedrich W. Hehl & Prof. Claus Kiefer

Bachelor's Thesis

- Title *Physics inside the Schwarzschild radius*
- Supervisor Prof. Yvonne Y. Wong

Refereeing

- 2023 – Journal of High Energy Physics (JHEP)
- 2022 – Physical Review D; Physics Letters B; Journal of Cosmology and Astroparticle Physics;
General Relativity and Gravitation; International Journal of Modern Physics A;
Symmetry; Universe
- 2021 – Europhysics Letters
- 2019 – European Physical Journal C
- 2018 – International Journal of Modern Physics D; Zeitschrift für Naturforschung A
- 2016 – Annals of Physics (Berlin)

Memberships

- 2018 – CAP (Canadian Association of Physicists), Division of Theoretical Physics
- 2018 – APS (American Physical Society), Division of Gravitation, Division of Astrophysics
- 2014 – DPG (German Physical Society), Division of Gravitation and Relativity
- 2014 – WWF (World Wide Fund for Nature)
- 2014 – Welthungerhilfe Germany (NGO for development cooperation and emergency aid)

Organized Conferences

- 2021 PhD/Early Postdoc Symposium on Non-locality
Main organizer, recurring online symposium, <http://www.spintwo.net/Symposium/>
- 2021 Meeting of the Division of Particles and Fields of the American Physical Society (DPF21)
Parallel Session Chair
- 2018 Joint Canada-Asia Pacific Conference on General Relativity and Relativistic Astrophysics, University of Alberta, Edmonton, Canada
Member of local organizing committee, chairperson in afternoon session.
- 2014 569th Wilhelm and Else Heraeus Seminar on Quantum Cosmology, German Physical Society, Bad Honnef, Germany
Development of conference website and database backend for participant management.

Work Experience

- 2009 – freelance web developer
- 2014 – 2015 teaching assistant for various graduate-level courses
Institute for Theoretical Physics, University of Cologne
- 2014 Development and implementation of registration interface for the conference “569th Wilhelm and Else Heraeus Seminar on Quantum Cosmology” (see above)
Institute for Theoretical Physics, University of Cologne, Prof. Claus Kiefer
- 2013 – 2014 Development of website content management system (www.loosdrecht.net)
II. Physical Institute, University of Cologne, Prof. Paul van Loosdrecht
- 2013 – 2014 Graphic design and poster supervision for the Physical Colloquium
Department of Physics, University of Cologne
- 2013 Supervision of physics department website (physik.uni-koeln.de)
Department of Physics, University of Cologne

Computer Skills

- algebra Mathematica, Maple, Reduce with Excalc
- programming C, Java, Python, BASIC, FreeBasic
- data analysis ROOT data analysis framework
- media $\text{\LaTeX}$, GIMP, Inkscape, Adobe InDesign, Adobe Premiere Pro, DaVinci Resolve 15
- web HTML, CSS, PHP, JavaScript, Ajax, MySQL, jQuery, Typo3, webdesign
- office LibreOffice Writer, Calc, Impress; Microsoft Word, Excel, Powerpoint

Other Interests

digital microcontroller electronics (see educational blog www.friendlywire.com and associated FriendlyWire YouTube channel with 19,000+ subscribers), programming, collecting vintage vacuum “Nixie” tubes (see personal website www.jb-electronics.de), webdesign, piano (Boogie Woogie, Rock’n’Roll), ballroom dancing, running

Other Projects

- 2012 Development of data analysis software optoScale, RWTH Aachen University
- 2011 – 2012 Undergraduate Fund Project, RWTH Aachen University \$5,000
- Study and construction of gas discharge tubes at the I. Physical Institute B, Prof. Lutz Feld

Languages

English (fluent), German (native), Turkish (intermediate), French (basic), Latin (basic)

References

Prof. Milada Margarete Mühlleitner (milada.muehlleitner@kit.edu)

Dean of physics, 2025–present, KIT, Germany

Institute director, 2023–2025, KIT, Germany

Prof. Christopher D. Carone (cdcaro@wm.edu)

Postdoc advisor, 2020–2023, William & Mary, Virginia, United States

Prof. Valeri P. Frolov (vfrolov@ualberta.ca)

Ph.D. supervisor, 2016–2020, University of Alberta, Canada

Further information available upon request. Last update: November 2025