

# Annegret Burtscher

## Curriculum Vitæ

Department of Mathematics, IMAPP  
Radboud University  
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The Netherlands  
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### Research interests

differential geometry, geometric analysis, partial differential equations, general relativity

### Education

- 2014 **PhD (Mathematics)**, *Université Pierre et Marie Curie – Paris 6 (Sorbonne Université) & University of Vienna*, France and Austria, *graduated with highest honors (sub auspiciis)*  
PhD thesis "Analytic and geometric aspects of spacetimes of low regularity"  
advised by Philippe G. LeFloch and James D. E. Grant (via a Cotutelle agreement, Dec 2010)
- 2010 **Bachelor (Earth Sciences)**, *University of Vienna*, Austria, *with highest honors*
- 2009 **Master (Mathematics)**, *University of Vienna*, Austria, *with highest honors*

### Employment

- 2018– **Associate Professor** (tenured since 2022), *Department of Mathematics and Institute for Mathematics, Astrophysics and Particle Physics*, Radboud University Nijmegen, Netherlands
- since Apr 2026 Associate Professor with ius promovendi
  - since Apr 2025 Associate Professor (UHD2)
  - Jul 2022 – Mar 2025 Assistant Professor (UD1, tenured)
  - Jul 2018 – Jun 2022 Assistant Professor (UD2, tenure-track)
- 2017–18 **Hill Assistant Professor**, *Department of Mathematics*, Rutgers University, New Jersey, United States of America
- 2015–17 **Postdoctoral researcher**, *Mathematical Institute and Hausdorff Center for Mathematics*, University of Bonn, Germany
- Mar–Jul 2014 **Riemann fellow**, *Riemann Center for Geometry and Physics and Institute for Differential Geometry*, Leibniz University Hannover, Germany
- 2009–14 **Research assistant**, *Faculty of Mathematics*, University of Vienna, Austria
- 2011–13 **Research assistant**, *Laboratoire Jacques-Louis Lions*, Université Pierre et Marie Curie (Paris 6), France
- 2006–11 **Teaching assistant**, *Faculty of Mathematics*, University of Vienna, Austria
- Jul–Sep 2008 **Intern**, *Seminar for Applied Mathematics*, ETH Zürich, Switzerland

### Maternity leave

- 2012, 2014–15 I have two children. In 2012 I was on *maternity leave* for 9 months (of which I worked 3 months parttime), in 2014–15 for 8 months. The mandatory leave was 4 months each.

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## Grants and awards

### Research grants

- Sep 2025 – **NWO Vidi Grant for the project “Spacetimes near the boundary of existence” (VI.Vidi.233.024)**, *Dutch Research Council (NWO)*, Netherlands  
PI, acceptance rate: 12%, funding amount: 850k€
- May 2025 – **NWO NWA ORC project “Emergence at all scales”**, *Dutch Research Council (NWO)*, Netherlands  
co-PI in consortium, PI: J. Armas (University of Amsterdam), funding amount: 7.1M€
- Oct 2024 – **Emerging Fields project “A new geometry for Einstein’s theory of relativity & beyond”**, *Austrian Research Council (FWF)*, Austria  
international project partner in consortium, PI: R. Steinbauer (U Vienna), funding amount: 7M€
- Oct 2019 – **NWO Veni Grant for the project “Nonsmooth spacetimes and singularities” (VI.Veni.192.208)**, *Dutch Research Council (NWO)*, Netherlands  
Sep 2023  
PI, acceptance rate: 14%, funding amount: 280k€
- Jul–Aug 2017 **ESI Junior Research Fellowship for the project “Lorentzian curvature revisited”**, *Erwin Schrödinger International Institute for Mathematics and Physics*, Vienna, Austria
- Oct 2012 – **“For Women in Science” fellowship for the project “A synthetic approach to spacetimes of low regularity”**, *L’Oréal, UNESCO, Austrian Academy of Sciences, Federal Ministry of Science and Research*, Austria  
Jun 2013  
PI, acceptance rate: 7%, funding amount: 20k€
- Sep 2011 – **Eiffel excellence scholarship for the project “Spacetimes of low regularity”**, *Ministry of Foreign and European Affairs*, France  
Jul 2012  
PI, acceptance rate: 31%, funding amount: 15k€
- Jan–Dec 2010 **PhD fellowship for the project “Analysis of singular geometrical structures” (FS 506)**, *University of Vienna*, Austria  
PI, acceptance rate: 28%, funding amount: 13k€

### Awards

- Nov 2014 **PhD Thesis award**, *Austrian Mathematical Society*, Austria  
for my PhD thesis “Analytic and geometric aspects of spacetimes of low regularity” (500€)
- Nov 2014 **Award of appreciation**, *Federal Ministry of Science, Research and Economy*, Austria  
for outstanding performance during university studies (2.5k€)
- Mar 2014 **Promotio sub auspiciis (præsidentis rei publicae)**, *President of Austria*, Austria  
highest possible honor for achievements during school and university studies in Austria (approximately 0.8% of all graduates receive a PhD sub auspiciis)
- Feb 2005, 2006 **Merit undergraduate scholarships**, *University of Vienna*, Austria  
and 2007  
for excellence in undergraduate studies, awarded three times in Mathematics (727€ each)

### Conference grants

- May 2025 competitive slot for the international conference “Geometry, Analysis, and Physics in Lorentzian Signature” at BIRS-IMAG Granada, Spain (with J. Flores, L. Mehidi, and S. Tahvildar-Zadeh)
- Jan 2025 Grant of the GQT Cluster (1500€) for the organization of the “15th Central European Relativity Seminar” at Radboud University Nijmegen (with S. Gunasekaran)

- Jun 2023 Grant of Fondation Compositio Mathematica (4000€) and the GQT Cluster (1500€), as well as a Radboud Internationalisation Grant (2500€) for the organization of the international conference “Singularities and Curvature in General Relativity” in Nijmegen
- Feb 2019 Grant of the NDSN+ Cluster (1000€) and Radboud Internationalisation Grant (2500€) for the organization of the “NonLinear Analysis Days” in Nijmegen (with S. Sonner)
- [Selected other \(competitive\) financial support for conference attendance etc.](#)
- 2022 Visiting position at the Fields Institute in Toronto, Canada
- 2020 Stipend for the Virtual Workshop on Scalar and Ricci Curvature
- 2018 AIP travel grant Rutgers University, HYP2018 travel grant
- 2015 Visitor at the Institut Henri Poincaré in Paris, France
- 2014 Excellence fellowship Austrian Ministry of Science, Education and Economy
- 2013 Klaus Tschira Foundation, Foundation Sciences Mathématiques de Paris
- 2011 OMV Austrian Mineral Oil Authority

## Publications

### Peer-reviewed articles

- [1] A. Burtscher, A conformal Hopf–Rinow theorem for semi-Riemannian spacetimes, *Indag. Math.* **37** (2026), no. 3, 703–743.
- [2] A. Burtscher and L. García-Heveling, Time functions on Lorentzian length spaces, *Ann. Henri Poincaré* **26** (2025), no. 5, 1533–1572.
- [3] A. Burtscher and L. García-Heveling, Global hyperbolicity through the eyes of the null distance, *Comm. Math. Phys.* **405** (2024), no. 4, article number 90, 35 p.
- [4] B. Allen and A. Burtscher, Properties of the null distance and spacetime convergence, *Int. Math. Res. Not. IMRN* **2022**, no. 10, 7729–7808.
- [5] A. Burtscher and G. Heckman, Variations of Weyl’s tube formula, *J. Geom. Anal.* **31** (2021), no. 12, 11952–11970.
- [6] A. Burtscher, M. K-H. Kiessling, and A. S. Tahvildar-Zadeh, Weak second Bianchi identity for static, spherically symmetric spacetimes with timelike singularities, *Classical Quantum Gravity* **38** (2021), 185001, 31 p.
- [7] A. Burtscher, C. Ketterer, R. J. McCann, and E. Woolgar, Inscribed radius bounds for lower Ricci bounded metric measure spaces with mean convex boundary, *SIGMA* **16** (2020), 131, 29 pages (Special Issue on Scalar and Ricci Curvature in honor of Misha Gromov on his 75th Birthday).
- [8] A. Y. Burtscher, Initial data and black holes for matter models, in “Hyperbolic Problems: Theory, Numerics, Applications”, by A. Bressan, M. Lewicka, D. Wang, Y. Zheng (Eds.), AIMS Ser. Appl. Math., vol. 10, 336–345, Am. Inst. Math. Sci. (AIMS), Springfield, MO, 2020.
- [9] L. Andersson and A. Y. Burtscher, On the asymptotic behavior of static perfect fluids, *Ann. Henri Poincaré* **20** (2019), no. 3, 813–857.
- [10] A. Y. Burtscher and R. Donniger, Hyperboloidal evolution and global dynamics for the focusing cubic wave equation, *Comm. Math. Phys.* **353** (2017), no. 2, 549–596.
- [11] A. Y. Burtscher, Length structures on manifolds with continuous Riemannian metrics, *New York J. Math.* **21** (2015), 273–296.

- [12] A. Y. Burtscher and P. G. LeFloch, The formation of trapped surfaces in spherically-symmetric Einstein–Euler spacetimes with bounded variation, *J. Math. Pures Appl.* **102** (2014), no. 6, 1164–1217.
- [13] A. Y. Burtscher, J. D. E. Grant, and P. G. LeFloch, New energy inequalities for tensorial wave equations on spacetimes that satisfy a one-sided bound, *Comm. Partial Differential Equations* **37** (2012), no. 9, 1596–1619.
- [14] A. Burtscher, M. Frehner, and B. Grasmann, Tectonic geomorphological investigations of antiforms using differential geometry: Permian Anticline, northern Iraq, *AAPG Bulletin* **96** (2012), no. 2, 301–314.
- [15] A. Burtscher and M. Kunzinger, Algebras of generalized functions with smooth parameter dependence, *Proc. Edinburgh Math. Soc.* **55** (2012), no. 1, 105–124.
- [16] A. Burtscher, An algebraic approach to manifold-valued generalized functions, *Monatsh. Math.* **166** (2012), no. 3-4, 361–370.

#### Theses

- [17] A. Y. Burtscher, *Analytic and geometric aspects of spacetimes of low regularity*, PhD thesis in Mathematics, Université Pierre et Marie Curie (Paris 6) and University of Vienna, 2014.
- [18] A. Y. Burtscher, *Curvature analysis of anticlines in the Zagros mountains (Iraq)*, Bachelor thesis in Earth Sciences, University of Vienna, 2010.
- [19] A. Y. Burtscher, *Isomorphisms of algebras of smooth and generalized functions*, Master thesis in Mathematics, University of Vienna, 2009.

#### Other (not peer-reviewed)

- [20] A. Burtscher, Local and global properties of the null distance, *Oberwolfach Rep.* **21** (2024), no. 3, 2045–2048.
- [21] A. Burtscher, Matter particles, naked singularities, and a weak second Bianchi identity, *Oberwolfach Rep.* **18** (2021), no. 3, 2231–2233.
- [22] A. Burtscher, Singularity formation for perfect fluids with linear equation of state, *Oberwolfach Rep.* **17** (2020), no. 4, 2104–2106.
- [23] A. Burtscher, *LehrFEM – a 2D finite element toolbox*, Manual for FEM MATLAB code, with contributions by P. Meury and E. Fonn, ETH Zürich, 2008.

#### Talks (†colloquium/plenary, \*seminar/invited, ‡minicourse)

I have been invited to present 3 Minicourses, 7 Colloquia, 25+ invited conference talks (excl. contributed) and 35+ seminar talks. Invitations in the period 2020–2022 that were cancelled due to the COVID-19 pandemic are not included in this number but listed below. For abstracts/slides/videos of talks, a list of attended conferences and presented posters, see [www.math.ru.nl/~burtscher](http://www.math.ru.nl/~burtscher).

- 2026 \*Geometry & Topology Seminar, Indian Institute of Science (IISc), Bengaluru, India
- 2025 \*Workshop with Women at the Intersection of Mathematics and Theoretical Physics, International Centre for Theoretical Sciences (ICTS), Bengaluru, India
- \*Department of Mathematics, University of Innsbruck, Austria
- \*Workshop on Optimal Transport and Metric Geometry across Structures, Bernoulli Center, Lausanne, Switzerland
- \*Program on Geometry and Convergence in Mathematical General Relativity, Simons Center, Stony Brook, NY, United States

- ‡Minicourse at GQT Graduate School, Groesbeek, Netherlands
- \*Workshop on a New Geometry for General Relativity, University of Vienna, Austria
- \*Mathematical GR and Hyperbolic PDE Seminar (online)
- 2024 \*MeRiOT2024 – School and Miniconference on Metric Measure Spaces, Ricci Curvature, and Optimal Transport, Villa Monastera, Varenna, Italy
- \*Mathematical Aspects of General Relativity Workshop (hybrid), Oberwolfach, Germany
- †41st Southern German Colloquium on Differential Geometry, Frankfurt, Germany
- \*Differential Geometry Seminar, University of Münster, Germany
- \*Partial Differential Equations Seminar, University of Cambridge, United Kingdom
- †11th International Meeting on Lorentzian Geometry, Mérida, Mexico
- 2023 \*Fundamentals of the Universe Symposium, University of Groningen, Netherlands
- \*Workshop on Emergent Dynamics, Vrije Universiteit Amsterdam, Netherlands
- \*Workshop on Formation of Sing. in GR and Dispersive PDEs, ICMS, Edinburgh, UK
- \*NWO Physics Conference, Veldhoven, Netherlands
- †Mathematics Colloquium, Trinity College Dublin, Ireland
- 2022 \*Geometric Analysis Seminar (hybrid), University of Oregon, Eugene, OR, United States
- \*Geometry/Topology Seminar, Oregon State University, Corvallis, OR, United States
- \*Differential Equations Seminar, University of Michigan, Ann Arbor, MI, United States
- \*Workshop on Mathematical Relativity, Scalar Curvature and Synthetic Lorentzian Geometry (hybrid), Fields Institute, Toronto, Canada
- ‡Minicourse at Summer School on the Cauchy Problem in General Relativity, Institut Mittag-Leffler, Sweden
- \*Mathematical Physics Seminar (online), University of Regensburg, Germany
- \*Topics in General Relativity Seminar, University of Münster, Germany
- \*ET@RU Seminar (online), Radboud University Nijmegen, Netherlands
- [cancelled due to COVID-19] \*Geometry & Topology Seminar, Durham University, UK
- 2021 [postponed due to COVID-19] \*Topics in GR Seminar, University of Münster, Germany
- †Mathematics Colloquium (online), University of Würzburg, Germany
- \*Lefschetz Seminar (online), Clark University, Worcester, MA, United States
- ‡Minicourse at Dutch Differential Topology & Geometry Seminar, Utrecht, Netherlands
- \*Mathematical Aspects of General Relativity Workshop (hybrid), Oberwolfach, Germany
- \*16th Marcel Grossmann Meeting (online), Rome, Italy
- \*Pure Analysis and PDEs Seminar (online), UCL and Imperial College London, UK
- [cancelled due to COVID-19] \*Non-regular Spacetime Geometry Workshop, ESI, Austria
- \*Analysis Seminar (online), University of Potsdam, Germany
- \*NMC 2021 – Dutch Mathematical Congress (online), Utrecht, Netherlands
- †10th International Meeting on Lorentzian Geometry (online), Córdoba, Spain
- †GQT Colloquium (online), Netherlands
- 2020 \*Mini-Workshop on Relativistic Fluids, Oberwolfach Research Institute, Germany
- \*NDNS+ Workshop (online), Twente, Netherlands
- [all crossed out meetings/seminars below were cancelled/postponed due to COVID-19]
- ~~\*Non-regular Spacetime Geometry Workshop, Erwin Schrödinger Institute, Austria~~
- ~~10th International Meeting on Lorentzian Geometry, Córdoba, Spain~~
- ~~\*NMC 2020 – 56th Dutch Mathematical Congress, Utrecht, Netherlands~~
- ~~\*Utrecht Geometry Center Seminar, Utrecht University, Netherlands~~
- ~~\*Mini-Workshop on Relativistic Fluids, Oberwolfach Research Institute, Germany~~
- \*Dynamical Systems Seminar, Ruhr-University Bochum, Germany

- 2019 \*General Relativity, Geometry and Analysis Program, Institut Mittag-Leffler, Sweden  
 \*PDE and Applications Seminar, TU Delft, Netherlands  
 \*University of Münster, Germany  
 †Fields Applied Mathematics Colloquium, Fields Institute, University of Toronto, Canada  
 \*Mathematical Physics Seminar, Rutgers University, NJ, United States  
 \*Low Regularity in GR Workshop, Simons Center, Stony Brook, NY, United States  
 \*Applied Analysis Seminar, University of Cologne, Germany  
 \*Geometry Seminar, Radboud University Nijmegen, Netherlands
- 2018 \*Geometric Analysis Days, Queen Mary University of London, United Kingdom  
 \*University of Konstanz, Germany  
 \*Quantum Gravity Seminar, Radboud University Nijmegen, Netherlands  
 HYP2018 Conference, Penn State University, PA, United States  
 \*AMS Spring Eastern Sectional Meeting, Boston, MA, United States  
 \*Mass in General Relativity Workshop, Simons Center, Stony Brook, NY, United States
- 2017 \*Mathematical Physics Seminar, Purdue University, IN, United States  
 †Postdoc Colloquium, Rutgers University, NJ, United States  
 \*Geometry and Relativity Program, Erwin Schrödinger Institute, Vienna, Austria  
 \*University of Bristol, United Kingdom  
 \*University of Vienna, Austria  
 \*Radboud University Nijmegen, Netherlands
- 2016 Young Women in Harmonic Analysis & PDE Workshop, Hausdorff Center, Bonn, Germany  
 \*University of Hamburg, Germany  
 \*Dublin City University, Ireland  
 \*University of Würzburg, Germany
- 2015 \*University of Tübingen, Germany  
 Longtime Behavior of Nonlinear Waves Workshop, Bielefeld University, Germany  
 \*Analysis Seminar, University of Bonn, Germany  
 \*Gravitational Physics Seminar, University of Vienna, Austria
- 2014 \*5th Northern German Differential Geometry Day, Leibniz University Hannover, Germany  
 \*Friedrich-Alexander-University Erlangen-Nürnberg, Germany  
 \*Goethe-University Frankfurt am Main, Germany  
 \*Differential Geometry Seminar, Leibniz University Hannover, Germany  
 \*University of Warwick, Coventry, United Kingdom  
 4th Central European Relativity Seminar, Erwin Schrödinger Institute, Vienna, Austria
- 2013 †Mathematics Colloquium, University of Iceland, Reykavík, Iceland  
 School in Geometric Analysis, Lake Como School of Advanced Studies, Italy  
 \*University of Münster, Germany  
 3rd Central European Relativity Seminar, Max Planck Institute, Golm, Germany
- 2012 †PhD Colloquium, University of Vienna, Austria  
 \*FWIS Award Ceremony, Austrian Academy of Sciences, Vienna Austria
- 2009 International Conference on Generalized Functions, University of Vienna, Austria

### Long research stays ( $\geq 1$ month)

- Fall 2022 **Fields Institute for Research in the Mathematical Sciences**, Toronto, ON, Canada, 11 weeks
- Summer 2020 [cancelled due to COVID-19] ~~Rutgers University, Piscataway, United States, 5 weeks~~

- Fall 2019 **Institut Mittag-Leffler, Djursholm, Sweden, 5 weeks**
- Summer 2017 **Erwin Schrödinger Institute for Mathematics and Physics, Vienna, Austria, 5 weeks**
- Spring 2014 **Riemann Center for Geometry and Physics, Leibniz University Hannover, Germany, 4 months**

### Short research stays ( $\leq 2$ weeks)

- Sep–Oct 2025 **Simons Center for Geometry and Physics, Stony Brook, NY, United States, 2 weeks**
- Oct 2022 **University of Michigan, Dept. of Mathematics, Ann Arbor, MI, United States, 3 days**
- Jun 2019 **University of Toronto, Department of Mathematics, ON, Canada, 1 week**
- May 2019 **Rutgers University, Department of Mathematics, NJ, United States, 1 week**
- Jul 2015 **University of Vienna, Faculty of Mathematics, Vienna, Austria, 2 weeks**
- May 2014 **Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Golm, Germany, 3 days**
- Oct 2013 **University of Iceland, Mathematics Division, Reykjavíc, Iceland, 1 week**

### Teaching

I have been teaching 10 different lecture courses and 3 different seminars (with yearly varying theme) throughout my career, and have been teaching assistant for 5 different courses. In all lecture courses I was responsible for preparing and presenting the course material as well as for assessing the students. In seminar courses I was responsible for preparing the material, meeting with students as well as their assessment. For all courses, I provide a structured e-learning environment that includes a detailed weekly overview, exercises (and where relevant, such as in the Analysis courses, also quizzes), recorded lectures, and exam information. If not indicated otherwise the language of instruction was English. I have also been teaching in German and Dutch.

† These courses consisted of lectures and workshops. Besides writing lecture notes I was also responsible for assigning homework and workshops problems as well as supervising the teaching assistants and graders.

‡ These courses I developed from scratch, and was also responsible for the course title and content.

#### Department of Mathematics, Radboud University Nijmegen, Netherlands

- Bachelor **Reële Analyse**<sup>†</sup> (1st year, Analysis 1, in Dutch): Winter 2023/24, 2024/25, 2025/26
- Optimization in Geometry and Physics**<sup>†‡</sup> (2nd year): Spring 2019, Fall 2020\*
- Introduction to Fourier Theory**<sup>†</sup> (2nd year): Spring 2020\*, Fall 2021\*
- Introduction to Partial Differential Equations**<sup>†</sup> (3rd year): Fall 2018, Fall 2020\*
- Riemannian Geometry**<sup>†</sup> (3rd year): Spring 2022\*, Spring 2023
- Modellenpracticum** (3rd year, Models laboratory, group projects): Spring 2026
- Master **Nonlinear Wave Equations**<sup>†‡</sup>: Spring 2020\*
- Riemannian Geometry**<sup>†</sup>: Fall 2024
- Singularities and Black Holes**<sup>†</sup>: Spring 2024
- Gravity<sup>+</sup> Club** (interdisciplinary seminar): Spring 2021\* (Cosmology), 2022\* (Gravity and Time), 2023 (Beyond Einstein), 2026 (Cosmology and Large-Scale Gravity)

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\* Teaching and examining was moved online in Mar 2020 due to the COVID-19 pandemic. The Intro PDE course and the Intro FT course were taught largely on campus. The courses in Spring 2022 were taught in a hybrid (and partly online) format.

Department of Mathematics, Rutgers University, NJ, United States

Spring 2018 **Introduction to Mathematical Reasoning**<sup>†</sup>, undergraduate lectures, 2 Sections

Fall 2017 **Introduction to Real Analysis 1**<sup>†</sup>, undergraduate lecture, Honors Section

Mathematical Institute, University of Bonn, Germany

Fall 2016 **Selected topics in Analysis and PDE – Math. General Relativity**<sup>‡</sup>, Master course

Spring 2016 **Introduction to the Calculus of Variations**<sup>‡</sup> (in German), Bachelor seminar

Faculty of Mathematics, University of Vienna, Austria (as teaching assistant)

Fall 2010 *Differential Equations* (in German), exercise course

Fall 2008 *Tutorial for beginners and Workshops* (in German)

Spring 2008 *Tutorial for beginners* (in German), 2 hours/week

Fall 2007 *Analysis 2* (in German), revision course

Spring 2007 *Analysis 1* (in German), revision course, together with Roland Steinbauer

Fall 2006 *Analysis 3* (in German), revision course, together with Roland Steinbauer

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## Teaching awards

2021 **Pluim (Kudos)** for “Introduction to Partial Differential Equations”, *Radboud University* recognition of excellence in teaching, awarded by the program committee of Mathematics (based on course evaluations)

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## Supervision

### Postdocs

2025– Jakob Hedicke (Radboud excellence fellow, 2 years)

2021–22 Elefterios Soultanis (Radboud excellence fellow, 2 years)

### PhD students

2025– Thijs de Kok (funded by my Vidi grant)

2025– Tomás O’Shea (funded by the Emergence consortium, co-supervised with Renate Loll)

2019–23 Leonardo García Heveling – Causality and Time in Non-smooth Lorentzian Geometry (2023 KWG PhD prize, 2023/24 Stieltjes prize for best Mathematics PhD thesis in the Netherlands)

### Master theses

exp. 2027 Juan Carlos Vega Oliver – Tangent Frames (co-supervised with Jakob Hedicke)

exp. 2026 Floris Farro – Mass in General Relativity from a Hamiltonian Point of View

2024 Jorn van Voorthuizen – Multipole Moments in Stationary Spacetimes (Master Mathematics and Physics & Astronomy, co-supervised with Béatrice Bonga in Theoretical Physics)

### Bachelor theses

exp. 2026 Tamar Hinkema – Topological Entropy (co-supervised with Jakob Hedicke)

2024 Tom Impens – Conformal Transformations in pseudo-Riemannian Geometry and Applications in General Relativity (Honors thesis)

2022 Tom van der Steen – Causality and the Concept of Time (co-supervised with Leonardo García Heveling)

2022 Luc Koenen – The Brunn–Minkowski Inequality

2019 Willem van Oosterhout – Birkhoff’s Theorem in General Relativity

## Further experience with evaluation of theses

*Independent PhD advisor:*

- 2019–24 Alicia Castro – Random Geometry and Quantum Gravity (supervisor: Timothy Budd)
- Member of the PhD manuscript and/or defense committee:*
- 2026 [upcoming] Saúl Andres Burgos Rodríguez – Convergence and Causal Completion in Lorentzian Geometry (University of Granada, Spain)
- 2026 [upcoming] Benjamin Meco – Mass and Causality in Geometric Relativity (Uppsala University, Sweden)
- 2025 Ariadna Ribes Metidieri – Seeing the Invisible (Radboud University Nijmegen, Netherlands)
- 2023 Amirpouyan Khosravikarchi – Black Holes Inside Out (Radboud University Nijmegen, Netherlands)
- 2024 *Member of a cum laude PhD committee* (confidential, TU Eindhoven, Netherlands)
- 2019– *Second reader* for several MSc and BSc theses in Mathematics at the Radboud University Nijmegen, Netherlands

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## Academic services

### Meetings organized

- Apr 2026 **1st Annual EAAS day**, organizer of the parallel session "Quantum spacetime and emergent structures", *Amsterdam*, Netherlands
- Mar 2026 **3rd Dutch Mathematical Relativity Day**, with A. Fuster and M. Wrochna, *Utrecht*, Netherlands
- May 2025 **Geometry, Analysis, and Physics in Lorentzian Signature (GAPsinLS)**, international 5-day conference organized with J. Flores, L. Mehidi, and A.S. Tahvildar-Zadeh, *BIRS-IMAG Granada*, Spain
- Jan 2025 **15th Central European Relativity Seminar (CERS)**, international 3-day annual workshop for young researchers organized locally with S. Gunasekaran and M. Visser, *Radboud University Nijmegen*, Netherlands
- Jun 2024 **2nd Dutch Mathematical Relativity Day**, with A. Fuster and M. Wrochna, *Utrecht*, Netherlands
- Jun 2023 **Singularities and Curvature in General Relativity (SCGR2023)**, international 5-day workshop organized with A.S. Tahvildar-Zadeh, *Nijmegen*, Netherlands
- Jan 2020 **1st Dutch Mathematical Relativity Day**, with A. Fuster, *Nijmegen*, Netherlands
- Jul 2019 **Equadiff 2019**, invited 2-day minisymposium "Mathematical Problems of Relativistic Physics" at the international 5-day biennial conference on differential equations in the broad sense, organized with A.S. Tahvildar-Zadeh, *Leiden*, Netherlands
- Feb 2019 **NonLinear Analysis Days**, international workshop organized with S. Sonner, *Nijmegen*, Netherlands

### Member of scientific committees etc. for meetings

- Jun–Jul 2026 **12th International Meeting on Lorentzian Geometry**, member of the scientific committee, *Lisbon*, Portugal

Jul 2025 **24th International Conference on General Relativity and Gravitation (GR24)**, invited to chair the A2 parallel sessions on “Classical GR: Mathematical developments” during a large 5-day triennial conference, responsible for selecting oral and poster contributions, *Glasgow, United Kingdom*

#### Seminars organized

- 2024– **Mathematics Colloquium**, with G. Lord (initiated with J. Houwing-Duistermaat), *Radboud University Nijmegen*
- 2020– **Joint Online Mathematical Relativity Colloquium (JoMaReC)**, with C. Cederbaum, G. Fournodavlos, E. Gasperin, J. Metzger and A. Sakovich, worldwide on a monthly basis
- 2021–22 **Mathematical Physics Seminar**, with D. Gajic and W. van Suijlekom, *Radboud University Nijmegen, Netherlands*
- 2020–21 **Mathematics Online Lunch Seminar**, with R. Kang and S. Sagave, *Radboud University Nijmegen, Netherlands*
- 2019–21 **Applied Analysis Seminar**, with G. Lord and S. Sonner, *Radboud University Nijmegen*
- 2014 **Geometry, Analysis and Physics Seminar**, with M. Bauer, V. Branding, D. Fajman and J. Joudioux, *Vienna, Austria*

#### Editing and refereeing

- 2025– **Lead guest editor** of peer-reviewed topical collection “Geometry, Analysis, and Physics in Lorentzian Signature” in *General Relativity and Gravitation*
- 2016– **Peer-reviews of research articles** for *Advances in Mathematics*, *Annales de l'Institut Henri Poincaré C, Analyse non linéaire*, *Bulletin of the London Mathematical Society*, *Classical and Quantum Gravity*, *Communications in Analysis and Geometry*, *Communications in Mathematical Physics*, *General Relativity and Gravitation*, *Indagationes Mathematicae*, *Inventiones Mathematicae*, *Journal of Differential Geometry*, *Journal of Functional Analysis*, *Journal of Mathematical Physics*, *Journal of the European Mathematical Society*, *Journal of the London Mathematical Society*, *Letters in Mathematical Physics*, *Nonlinearity*, *Publications Mathématiques de l'IHÉS* (see verified reviews on Web of Science)
- 2015– **Public reviews of research articles** for *Mathematical Reviews* (see MathSciNet)

#### Innovation and administration in teaching

- Jun 2026 **Show and Tell: Digitally assessing in Mathematics**, *Faculty of Science Education Day*, *Radboud University Nijmegen*  
I will present a short talk and lead a discussion about the use and experience of the digital examining in mathematics for certain first-year courses.
- 2024– **Introduction of Ans**, *Department of Mathematics*, *Radboud University Nijmegen*  
initiative and contact point for implementation of digital examining and grading via the software package Ans, together with Sep Thijssen (educational innovator)
- 2019, 2024 **Leerlijn Analyse committee** (informal), *Radboud University Nijmegen*  
improving Bachelor program in direction Analysis

#### Outreach, student recruitment, and diversity

- 2021– **Bachelor Open Dagen**, *Radboud University, Nijmegen, Netherlands*  
general introduction of our Bachelor program and trial lecture “Koningin Dido en het isoperimetrische probleem” for high school students during biannual Open Days (in Dutch)
- Jan 2026 **PhD workshop on family planning and care work**, *Institute for Science in Society (ISiS) & Radboud Center for Natural Philosophy, Radboud University, Nijmegen, Netherlands*  
I was invited to share and discuss daily academic and personal experiences.

- May 2024 **Testimonial**, *Radboud University*, Nijmegen, Netherlands  
I shared my approach to research and teaching which is used for advertising our Master program.
- May 2023 **FNWI Diversity Day: Significance of Role Models**, *Faculty of Science, Radboud University*, Nijmegen, Netherlands  
I discussed my personal opinion about, experience with and significance of role models in the context of academia and for career (choices) in an interview. These mutual interviews form part of a poster exhibition.
- May 2023 **Women in Math Day**, *Dept of Mathematics, Radboud University*, Nijmegen, Netherlands  
I participated in a panel discussion about careers in mathematics, the dual career problem, uncertainties, work-life-balance etc., mostly attended by PhD and Master students.
- Mar 2023 **Wall of Fame**, *HTL Rankweil*, Austria  
interview with my former secondary school in Austria (specializing in civil and electrical engineering) to showcase the many different career paths of successful alumni; regular installment at the school
- Jan 2022 **Master's video**, *Radboud University*, Nijmegen, Netherlands  
part of a video advertising the Master's program in Mathematics
- Oct 2019 **Talk "The Mathematics of Karen Uhlenbeck"**, *Desda student organization*, Nijmegen, Netherlands  
delivered a general talk about Karen Uhlenbeck's work (the first and only female mathematician to win an Abel prize in 2019) to Bachelor and Master students
- May 2018 **Career Day**, *Irving Primary School*, Highland Park, NJ, United States  
I described what I do in my work as an assistant professor of mathematics to 5- to 7-year-old students (teaching, research, etc.). Using simple drawings we discussed metric spaces and how light travels in the universe, in particular, we explored gravitational lensing and black holes.
- Feb 2018 **Postdoc Life Panel**, *Dept of Mathematics, Rutgers University*, United States  
discussed on a panel what it means to work as a researcher and teacher in mathematics at a research university; primarily aimed at graduate and undergraduate students

#### Committees and other formal roles

- 2025– **PR committee**, *Department of Mathematics, Radboud University Nijmegen*  
responsible for guest lectures at high schools and involved in open days
- 2022–24 **Advisory board**, *Department of Mathematics, Radboud University Nijmegen*  
members support the head of department in the governance of the department
- 2022 **Funding assessment committee**, *NWO (Dutch Research Council)*, Netherlands  
member of the assessment committee for Open Competition-M grants in the domain Science
- 2020 **Hiring committee**, *Department of Mathematics, Radboud University*  
internal member for tenure track position in Mathematical Physics
- 2019 **Hiring committee**, *TU Delft*, Netherlands  
external member for tenure track position in Analysis

#### Other roles

- 2022– **Master Mentor**, *Department of Mathematics, Radboud University Nijmegen*  
Each Master student in mathematics is mentored by a staff member.
- 2021– **EWM Mentor**, *European Women in Mathematics*, Europe  
I am a mentor for young female mathematicians in the mentoring program of the EWM.
- 2019– **Departmental webpage maintenance**, *Department of Mathematics, Radboud University*  
shared responsibility for announcements of seminars, transition from CMS to new webpage etc.

2006–2010 **(Board) Member IAESTE Vienna**, Austria, voluntary work  
The "International Association for the Exchange of Students for Technical Experience" organizes internships worldwide for engineering and science students. In 2008 I was board member for Exchange Outgoing and responsible for 68 students working abroad.

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## Awards for Service

Sep 2020 **Trusted Reviewer Award**, *IOP Publishing*  
"in recognition of an exceptionally high level of peer review competency"

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## Memberships

2024– Association for Women in Mathematical Physics (AWMP)  
2022– Royal Dutch Mathematical Society (KWG)  
2018– American Mathematical Society (AMS)  
2016– European Women in Mathematics (EWM)  
2017–2018 Association for Women in Mathematics (AWM)  
2015–2017 Austrian Mathematical Society (ÖMG)

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## Additional training

Apr 2026 *Supervising PhD candidates* (to obtain the ius promovendi), Radboud University  
Mar 2026 *For your eyes only – Information security* (e-learning course), Radboud University  
Sep 2025 *You can't say that!* (performance and discussion on social safety), Radboud University  
Sep–Nov 2023 **Professionele spreekvaardigheid voor gevorderde anderstaligen** (Professional speaking skills for advanced non-native Dutch speakers), *Radboud in'to Languages*  
This online course optimized my professional speaking and leadership skills in a Dutch environment: giving feedback, advising, negotiating, chairing meetings, job and performance interviews etc.  
Nov 2021 **University Teaching Qualification** (UTQ, in Dutch BKO), *Radboud University*  
The UTQ is a proof of didactic competence for lecturers in academic higher education. Lecturers who are certified are recognised by all 14 research universities in the Netherlands as being qualified to teach at the higher academic level. For further information see [www.vsnun.nl](http://www.vsnun.nl).  
Aug 2020 *PhD supervision training*, Department of Mathematics, Radboud University  
Nov 2018 *Towards Equality in Science — Workshop for hiring and selection committees at the Science Faculty*, Radboud University  
Feb 2018 *Active Learning: Picking the right method for your class*, Rutgers University  
May 2013 *How to reach general public?*, University of Vienna  
Apr 2013 *Publishing with impact*, University of Vienna  
Jan 2013 *Self-management*, University of Vienna  
Apr–May 2010 *Exposé and outline writing*, University of Vienna

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## Media coverage

Aug 2024 *She+Maths interview*, Instagram/Facebook series highlighting female mathematicians  
Dec 2020 *Proof by example: Annegret Burtscher*, *Nieuw Archief voor Wiskunde*, Netherlands  
Apr 2015 *The faces behind our research*, Instagram series of the HCM Bonn, Germany  
Dec 2014 *Mit mathematischen Methoden den Geheimnissen des Alls näherkommen: Raumzeiten?*, *Falter – Heureka*, Austria

Mar 2014 *Exzellent in Mathematik*, Vorarlberger Nachrichten, Austria

Mar 2013 *Relativitätstheorie zu Ende gedacht*, Research newsletter of the University of Vienna, Austria

Feb 2013 *Das Universum in Gleichungen*, Der Standard, Austria

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## Languages

*German* (native), *English* (fluent), *Dutch* (advanced), *French* (basic), *Hindi* (basic)