

Magdalena Kersting

Curriculum Vitae

Research Section for Physics Education
Department of Physics
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Education

- 2015-present **PhD in Physics Education**¹, University of Oslo, Norway.
Thesis: General Relativity in Secondary School - Research-Based Development of Learning Resources and Analyses of Students' Conceptual Understanding Using the Model of Educational Reconstruction
- 2015-2018 **Diploma in Communication and Public Relations Management**, Freie Journalistenschule Berlin, Germany.
Thesis: Communication at the crossroads of science and education
- 2013-2015 **Master of Science in Mathematics**, University of Göttingen, Germany.
- 2009–2012 **Bachelor of Science in Mathematics**, University of Göttingen, Germany.
- 2008–2011 **Bachelor of Science in Physics**, University of Göttingen, Germany.

Research Stays Abroad

- 5/2019- **Visiting Research Fellow**, ARC Centre of Excellence for Gravitational Wave
6/2019 *Discovery*, Swinburne University of Technology, Melbourne, Australia.
- 8/2018- **Visiting Research Fellow**, ARC Centre of Excellence for Gravitational Wave
4/2019 *Discovery*, University of Western Australia, Perth, Australia.
- 08/2014- **Master's Thesis Abroad**, Department of Mathematics, University of Oslo,
3/2015 *Norway*.
- 01/2013- **Postgraduate Studies Abroad**, Department of Mathematics, University of
8/2013 *Oslo, Norway*.

Publications & Conference Contributions

Refereed Research Articles

- 1) **Kersting, M. (2019)**, *Free fall in curved spacetime - how to visualise gravity in general relativity*, *Physics Education*, 54,035008, 593–623.
<https://dx.doi.org/10.1088/1361-6552/ab08f5>

¹Submission of the PhD-thesis is planned for September 2019 with an expected defence in December 2019.

- 2) **Steier, R., Kersting, M. (2019)**, *Metaimagining and embodied conceptions of spacetime*, *Cognition & Instruction*, 37:2, 145-168.
DOI: 10.1080/07370008.2019.1580711
- 3) **Steier, R., Kersting, M., Silseth, K. (2019)**, *Imagining with improvised representations in CSCL environments*, *International Journal of Computer-Supported Collaborative Learning*, 14: 109.
<https://doi.org/10.1007/s11412-019-09295-1>
- 4) **Kersting, M., Henriksen, E. K., Bøe, M. V., & Angell, C. (2018)**, *General relativity in upper secondary school: design and evaluation of an online learning environment using the model of educational reconstruction.*, *Physical Review Physics Education Research*, 14(1)), 010130-1-010130-18..
<http://doi.org/10.1103/PhysRevPhysEducRes.14.010130>
- 5) **Kersting, M., Steier, R. (2018)**, *Understanding curved spacetime – the role of the rubber sheet analogy in learning general relativity*, *Science & Education*, 27(7–8), 593–623.
<https://doi.org/10.1007/s11191-018-9997-4>
- 6) **Kersting, M. (in press)**, *Navigating four dimensions – upper secondary students' understanding of movement in spacetime.*
- 7) **Kersting, M.(in press)**, *How history and philosophy of science can inform teaching and learning of general relativity in upper secondary school.*

Refereed Conference Contributions

- 7/2019 **GIREP 2019**, Budapest, Hungary, Oral Presentation: Free fall in curved spacetime - how to visualize gravity in general relativity.
- 12/2018 **23rd Australian Institute of Physics Congress**, Perth, Australia, Oral Presentation: GR in upper secondary school: design and evaluation of an online learning environment.
- 7/2018 **BWS 2018**, London, UK, Oral Presentation: The Role of Imagination in the Language Games of the Science Classroom.
- 7/2018 **GIREP-MPTL 2018**, San Sebastian, Spain, Oral Presentation: How history and philosophy of science can inform teaching and learning of general relativity in upper secondary school.
- 7/2018 **GIREP-MPTL 2018**, San Sebastian, Spain, Oral Presentation: Navigating four dimensions – upper secondary students' understanding of movement in spacetime.
- 7/2018 **15th Marcel Grossmann Meeting**, Rome, Italy, Oral Presentation: How History and Philosophy of Science Can Inform Teaching and Learning of General Relativity in Upper Secondary School.

- 6/2018 **2nd Symposium on Embodied Interaction: "Gesture, Touch, and Embodied Meaning-Making"**, Odense, Denmark, Oral Presentation: "Gravity, imagination and embodied conceptions of spacetime".
- 3/2018 **PESGB 2018**, Oxford, Great Britain, Poster Presentation: General Relativity in Upper Secondary School: How Philosophy of Science Can Inform Physics Education of the 21st century.
- 8/2017 **JURE**, Tampere, Finland, Poster Presentations: Educational Reconstruction of General Relativity Through a Collaborative Online Learning Environment.
- 8/2017 **ESERA**, Dublin, Ireland, Symposium Presentation: Gravity, Imagination, and Embodied Conceptions of Spacetime.
- 7/2017 **GIREP-ICPE-EPEC**, Dublin, Ireland, Oral Presentation: Teaching General Relativity in Upper Secondary Schools: an Educational Reconstruction.
- 7/2017 **GIREP-ICPE-EPEC**, Dublin, Ireland, Oral Presentation: An International Research Collaboration in the Teaching and Learning of Einsteinian Physics.

Workshops, Presentations, & Invited Talks

- 2/2019 **GR22-Amaldi13**, Valencia, Spain, Invited Talk: Bringing general relativity to secondary schools: Design and evaluation of a digital learning environment.
- 7/2019 **GIREP 2019**, Budapest, Hungary, Symposium: Teaching and Learning of Einsteinian Physics.
- 2/2019 **WE-Heraeus Seminar - General Relativity as a Challenge for Physics Education**, Bad Honnef, Germany, Invited Talk: Curved Spacetime: Investigating Students' Conceptual Understanding in General Relativity.
- 12/2018 **STAWA Future Science Conference 2018**, Perth, Australia, Workshop Presentation: Modernising Physics Teaching.
- 11/2018 **Fogarty Foundation Postgraduate Research Forum 2018**, Perth, Australia, Ignite Presentation: Understanding Curved Spacetime.
- 7/2018 **GIREP-MPTL 2018**, San Sebastian, Spain, Chair of Symposium. International Perspectives on Einsteinian Physics at Upper Secondary School Level
- 6/2017 **Science on Stage**, Debrecen, Hungary, Fair and Poster Presentation: A Relatively Modern Physics Lesson.
- 7/2017 **GIREP-ICPE-EPEC**, Dublin, Ireland, Chair of Symposium. The Teaching and Learning of Einsteinian Physics in International Contexts
- 12/2016 **Future Science Conference**, Perth, Australia, Oral Presentation: General Relativity: Making Einstein's Theory Teachable.
- 11/2016 **International Workshop on the Teaching and Learning of Einsteinian Physics in the Era of Gravitational Astronomy**, Gin Gin, Western Australia, Oral Presentation: Curved space and warped time: Students' understanding of gravity.

8/2016 **National Conference on Teaching of Physics**, Copenhagen, Denmark,
Oral Presentation: ReleKvant - undervisningsopplegg om relativitetsteori og
kvantefysikk.

■ Honors, Scholarships & Awards

- 2019 **Best Oral Presentation of a Young Researcher in Physics Education, GIREP 2019.**
- 2019 **Science Studies Colloquium Series Qualification Scholarship.**
- 2019 **EARLI Mentoring Grant.**
- 2018 **Norwegian Research Council personal overseas research grant.**
- 2018 **ESERA Travel Award.**
- 2016 **Norwegian Research Council workshop grant, joint application.**
- 2014 **DAAD Promos Mobility Stipend.**
- 2011 **Bachelor of Science with Distinction.**

■ Professional Membership

- 2018-present **ISLS**, International Society of the Learning Sciences.
- 2017-present **PESGB**, Philosophy of Education Society of Great Britain.
- 2016-present **EARLI**, European Association for Research on Learning and Instruction.
- 2015-present **ESERA**, European Science Education Research Association.

■ Teaching Experience

- 8/2016-
present **Undergraduate and Graduate Courses, Teaching Assistant**, Oslo, Norway.
 - (Spring 2018) FYS4160 - General Relativity
 - (Spring 2017) FYS4160 - General Relativity
 - (Autumn 2016) FYS1120 - Electromagnetism
- 3/2014-
4/2015 **Revision Courses, Course Reader**, Göttingen, Germany.
 - (4/2015) Multimedia Revision Course in Calculus
 - (3/2014) Revision Course in Calculus
- 10/2010-
3/2014 **Undergraduate Courses, Teaching Assistant**, Göttingen, Germany.
 - (Winter 2013/14) Calculus
 - (Summer 2012) Complex Analysis
 - (Winter 2011/12) Calculus
 - (Summer 2011) Electrodynamics
 - (Winter 2010/11) Calculus
- 10/2009-
9/2013 **Freshmen Courses, Course Reader and Teaching Assistant**, Göttingen,
Germany.
 - (9/2013) Mathematics for Agricultural Science and Forestry Students
 - (10/2010) Physics for Agricultural Science and Forestry Students
 - (9/2010) Mathematics for Physics and Mathematics Students
 - (10/2009) Physics for Agricultural Science Students

Professional Development Workshops

10/2017- **Teacher Professional Development Workshops**, *Workshop Leader*.

- present ○ (12/2018) STAWA Future Science, Perth, Australia
- (11/2018) University of Western Australia, Perth, Australia
- (6/2018) Sandefjord Highschool, Sandefjord, Norway
- (11/2017) University of Bergen, Bergen, Norway
- (10/2017) Bro Aschehoug Publishing House, Oslo, Norway

Outreach & Science Communication

- 2018-present **Blogger for University Science Magazine Titan**, titan.uio.no.
Kersting, M. (2018), *General Relativity – Why high school students should learn about Einstein’s most revolutionary idea.*, Titan.uio.no.
<https://titan.uio.no/node/2671>
Kersting, M. (2018), *Navigating four dimensions*, Lateral Magazine.
<http://www.lateralmag.com/articles/issue-27/navigating-four-dimensions>
Kersting, M. (2018), *Stretching the imagination: How a rubber sheet challenges our knowledge of gravity*, Medium.
<https://tinyurl.com/y7su9dxa>

Professional Activities

- 2018-present **Reviewer**, *Science and Education*.
2019 **Reviewer**, *Unge Forskere (Young Scientists Competition)*.
2017 **Member of Organizing Committee**, *Conference “EuroDoc: Open Science – Challenges and Opportunities for Early Career Researchers”*, Oslo, Norway.
2016–2017 **Events Officer for UiODoc**, *Interest Organisation for PhDs and PostDocs at the University of Oslo*, Norway.
2016 **Member of Organizing Committee**, *Conference “International Workshop on the Teaching and Learning of Einsteinian Physics in the Era of Gravitational Astronomy”*, Gin Gin, Western Australia.
2013–2016 **Project Leader and Mentor for Student Physics Magazine “Detektor”**, Hamburg, Germany.

Languages

German	Native Speaker	English	Fluent
Norwegian	Fluent	French	Basic Working Knowledge