

# Magdalena Kersting

## List of Publications

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### Peer-Reviewed Research Papers

- 1) **Hughes, T., Kersting, M. (2021)**, *The invisibility of time dilation*, Physics Education, 56, 025011.  
<https://doi.org/10.1088/1361-6552/abce02>
- 2) **Kersting, M., Steier, R., Venville, G. (2020)**, *Exploring participant engagement during an astrophysics virtual reality experience at a science festival*, International Journal of Science Education, Part B.  
<https://doi.org/10.1080/21548455.2020.1857458>
- 3) **Kersting, M., Toellner, R., Blair, D., Burman, R. (2020)**, *Gravity and Warped Time - Clarifying Conceptual Confusions in General Relativity*, Physics Education, 55, 015023.  
<https://doi.org/10.1088/1361-6552/AB56D7>
- 4) **Choudhary, R., Kraus, U., Kersting, M., Zahn, C., Zadnik, M., Meagher, R., Blair, D. (2019)**, *Einsteinian Physics in the Classroom: Integrating Physical and Digital Learning Resources in the Context of an International Research Collaboration*, The Physics Educator, 1(4) 1950016.  
<https://doi.org/10.1142/S2661339519500161>
- 5) **Steier, R., Kersting, M. (2019)**, *Metaimagining and embodied conceptions of spacetime*, Cognition & Instruction, 37:2, 145-168.  
<https://doi.org/10.1080/07370008.2019.1580711>
- 6) **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>
- 7) **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>

- 8) **Kersting, M. (2019)**, *Navigating four dimensions – upper secondary students' understanding of movement in spacetime*, Journal of Physics: Conference Series, Volume 1287, Number 1.  
<http://doi.org/10.1088/1742-6596/1287/1/012007>
- 9) **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>
- 10) **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>
- 11) **Kamphorst, F., Kersting, M. (2019)**, *Design-Based Research and the Model of Educational Reconstruction - A Combined Approach to Design Successful Science Instruction*, In Levrini, O. & Tasquier, G. (Eds.) Electronic Proceedings of the ESERA 2019 Conference. The beauty and pleasure of understanding: engaging with contemporary challenges through science education, Part [18] (co-ed. [Kapon, S. & Ødegaard, M.]), (pp. [256]). Bologna: ALMA MATER STUDIORUM – University of Bologna. 978- 88-945874-0-1978-88-945874-0-1.
- 12) **Kersting, M. (in press)**, *How history and philosophy of science can inform teaching and learning of general relativity in upper secondary school*, Proceedings of the Fifteenth Marcel Grossman Meeting on General Relativity, World Scientific, Singapore.
- 13) **Woithe, J., Kersting, M. (in press)**, *Bend it like dark matter*, Physics Education.
- 14) **Kersting, M., Haglund, J., Steier, R. (under review)**, *A growing body of knowledge: On the four different senses of embodiment in science education.*
- 15) **Kersting, M., Schrocker, G., Papantoniou, S. (under review)**, *'I loved exploring a new dimension of reality' - a case study of middle-school girls encountering Einsteinian physics in the classroom.*

## Books & Book Chapters

- 1) **Kersting, M. (2020)**, *Visualizing Four Dimensions in Special and General Relativity*, Handbook of the Mathematics of the Arts and Sciences, Bharath Sriraman (Ed), Springer Nature, Cham.  
[https://doi.org/10.1007/978-3-319-70658-0\\_120-1](https://doi.org/10.1007/978-3-319-70658-0_120-1)
- 2) **Kersting, M., Blair, D. (Eds) (2021, forthcoming)**, *Teaching Einsteinian Physics in Schools: An Essential Guide for Teachers in Training and Practice*, Routledge, Singapore.

- 3) **Kersting, M. (in press)**, *Using the language of gravity to teach about space, time, and matter in general relativity*, Teaching Einsteinian Physics in Schools, Kersting, M., Blair, D. (Eds), Routledge (2021).
- 4) **Kersting, M. (in press)**, *Standing on the shoulders of giants – how historical perspectives on gravity can inform modern physics education*, Teaching Einsteinian Physics in Schools, Kersting, M., Blair, D. (Eds), Routledge (2021).
- 5) **Blair, D., Kersting, M. (in press)**, *The difficult birth of gravitational wave astronomy*, Teaching Einsteinian Physics in Schools, Kersting, M., Blair, D. (Eds), Routledge (2021).

### Selection of Outreach & Science Communication

- 1) **Kersting, M., Kube, J. (2019)**, *The first catalogue of cosmic collisions*, Einstein Online Band 11, 11-1001.  
<https://www.einstein-online.info/en/spotlight/The-first-catalogue-of-cosmic-collisions/>
- 2) **Kersting, M. (2019)**, *Meet the Scientist*, Wonk Magazine.  
<https://www.wonkmagazine.co.uk/magdalena-kersting>
- 3) **Kersting, M. (2018)**, *Navigating Four Dimensions*, Lateral Magazine.  
<http://www.lateralmag.com/articles/issue-27/navigating-four-dimensions>
- 4) **Kersting, M. (2018)**, *General Relativity – Why high school students should learn about Einstein's most revolutionary idea*, Titan Magazine.  
<https://titan.uio.no/naturvitenskap-utdanning-english/2018/general-relativity-why-high-school-students-should-learn-about-einsteins-most-revolutionary-idea>

### Selection of Key Note & Invited Talks

- 02/2020 **Inaugural Einstein-First International Workshop: Teaching Einsteinian Physics in Schools, Perth, Australia**, Impact in Einsteinian Physics Education.  
(Key Note Talk)
- 11/2019 **Örebro University, Örebro, Sweden**, Computer-supported collaborative learning & embodied conceptions of spacetime.  
(Invited Talk)
- 11/2019 **Karlstad University, Karlstad, Sweden**, Embodied Cognition in Science Education - Examples from Relativity.  
(Invited Talk)
- 11/2019 **Linköping University, Norrköping, Sweden**, Computer-supported collaborative learning & embodied conceptions of spacetime.  
(Invited Talk)

- 7/2019 **Institute of Physics, London, UK**, Impact in Physics Education: the Transformational Power of Educational Research Collaborations.  
(Invited Talk)
- 7/2019 **GR22-Amaldi13, Valencia, Spain**, Bringing general relativity to secondary schools: design and evaluation of a digital learning environment.  
(Invited Talk)
- 2/2019 **WE-Heraeus Seminar, Bad Honnef, Germany**, Curved Spacetime: Investigating Students' Conceptual Understanding in General Relativity.  
(Invited Talk)

### ■ Chaired Symposia

- 07/2019 **GIREP 2019, Budapest, Hungary**, Teaching and Learning of Einsteinian Physics.
- 07/2018 **GIREP-MPTL 2018, San Sebastian, Spain**, International Perspectives on Einsteinian Physics at the Upper Secondary School Level.
- 07/2017 **GIREP-ICPE-EPEC 2017, Dublin, Ireland**, The Teaching and Learning of Einsteinian Physics in International Contexts.

### ■ Selection of Conference Presentations

- 11/2020 **GIREP 2020, virtual**, Instructional Strategies to Foster Motivation for Einsteinian Physics Among Middle School Girls.
- 8/2020 **EARLI SIG 6&7 2020, virtual**, Learning Processes of Embodied Interaction with Disembodied Concepts in CSCL Environments.
- 8/2019 **ESERA 2019, Bologna, Italy**, Scientific Concepts and the Role of Imagination in the Language Games of the Science Classroom.
- 7/2019 **GIREP 2019, Budapest, Hungary**, Free fall in curved spacetime - how to visualize gravity in general relativity.
- 12/2018 **23rd Australian Institute of Physics Congress, Perth, Australia**, GR in upper secondary school: design and evaluation of an online learning environment.
- 6/2018 **2nd Symposium on Embodied Interaction: "Gesture, Touch, and Embodied Meaning-Making", Odense, Denmark**, Gravity, imagination and embodied conceptions of spacetime.
- 3/2018 **PESGB 2018, Oxford, Great Britain**, General Relativity in Upper Secondary School: How Philosophy of Science Can Inform Physics Education of the 21st century.
- 8/2017 **EARLI JURE, Tampere, Finland**, Educational Reconstruction of General Relativity Through a Collaborative Online Learning Environment.
- 8/2017 **ESERA 2017, Dublin, Ireland**, Gravity, Imagination, and Embodied Conceptions of Spacetime.