

# Tim Rätz

## Curriculum Vitae

Institute of Philosophy  
University of Bern  
Switzerland  
✉ tim.raez@posteo.de

### Academic Appointments

- 12/2020- **Postdoctoral Researcher**, Institute of Philosophy, University of Bern, funded by SNF
- 07/2020- **Postdoctoral Researcher**, Institute of Biomedical Ethics  
09/2020 and History of Medicine, University of Zürich, funded by SNF
- 07/2019- **Postdoctoral Researcher**, Institute of Philosophy, Univer-  
06/2020 sity of Bern, funded by cogito foundation
- 08/2017- **Assistant and Lecturer**, Institute of Philosophy, University  
05/2019 of Bern
- 05/2014- **Postdoctoral Researcher and Lecturer**, Department of  
04/2017 Philosophy, University of Konstanz, funded by TWCF
- 03/2010- **Research and Teaching Assistant**, Department of Philos-  
12/2013 ophy, University of Lausanne, funded by SNF
- 01/2007- **Research and Teaching Assistant**, Institute of Philoso-  
06/2007 phy, University of Bern
- 2004-2006 **Tutor**, Institute of Philosophy, University of Bern

### Education

- 01/2019 **MSc. in Mathematics**, *University of Bern*.  
Thesis: Approximation of a volume element along a geodesic in the Heisenberg group
- 12/2013 **PhD in Philosophy**, *University of Lausanne*.  
Thesis: “On the Applicability of Mathematics – Philosophical and Historical Perspectives”  
Thesis Committee: Hannes Leitgeb, Claus Beisbart
- 2010-2013 PhD student, *University of Lausanne*.  
Supervisor: Michael Esfeld
- 11/2006 **MSc. in Philosophy**, *University of Bern*.  
Thesis: Undecidability of First-Order Logic
- 2001-2006 Studies in Philosophy and Mathematics, *University of Bern*.

### Teaching Experience

- 2018 (fall) **co-Lecturer**, *Transformative Experience*, University of Bern.

- 2018 (spring) **Lecturer**, *Scientific Explanation*, University of Bern.  
 2017 (fall) **Lecturer**, *Philosophy of Mathematics*, University of Bern.  
 2015 (fall) **Lecturer**, *Thomas Kuhn: The Structure of Scientific Revolutions*, University of Konstanz.  
 2012 (fall) **co-Lecturer**, *Philosophy of Science Seminar*, University of Lausanne.  
 2010-2013 **Teaching Assistant**, *Master Projects in Philosophy of Science*, EPFL.  
 2007 (spring) **Lecturer**, *Introduction to Classical Logic*, University of Bern.

## Languages

- German Mother tongue  
 English Fluent  
 French Intermediate

## Publications

Articles (peer-reviewed journals and conference proceedings)

- 2022 Hertweck, C. and Rätz, T.: Gradual (In)Compatibility of Fairness Criteria. *Proceedings of the 36th AAAI Conference on Artificial Intelligence (AAAI '22)*.
- 2021 Rätz, T.: Group Fairness: Independence Revisited. *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAccT '21)*.
- 2020 Rätz, T.: Understanding Deep Learning With Statistical Relevance. *Philosophy of Science*.
- 2020 Jebeile, J., Lam, V. and Rätz, T.: Understanding Climate Change with Statistical Downscaling and Machine Learning *Synthese*.
- 2018 Rätz, T.: Euler's Königsberg: The Explanatory Power of Mathematics. *European Journal for Philosophy of Science* 8: 331–46.
- 2017 Rätz, T.: The Volterra Principle Generalized. *Philosophy of Science* 84(4): 737–60.
- 2017 Rätz, T.: The Silent Hexagon: Explaining Comb Structures. *Synthese* 194(5): 1703–1724.
- 2015 Rätz, T. and T. Sauer: Outline of a Dynamical Inferential Conception of the Application of Mathematics. *Studies in History and Philosophy of Modern Physics* 49: 57–72.

- 2015 Rätz, T.: Say My Name: An Objection to Ante Rem Structuralism. *Philosophia Mathematica* 23(1): 116–25.
- 2013 Rätz, T.: On the Application of the Honeycomb Conjecture to the Bee’s Honeycomb. *Philosophia Mathematica* 21(3): 351–60.
- 2013 Scholl, R., and T. Rätz: Modeling causal structures. *European Journal for Philosophy of Science* 3(1): 115–32.

#### Articles (collections and other)

- 2017 Rätz, T. and T. Sauer: The collaboration between Marcel Grossmann and Albert Einstein as a case of the application of mathematics. *Proceedings of the Fourteenth Marcel Grossmann Meeting on General Relativity*: 3368–3371.
- 2016 Rätz, T.: The Necessity of Learning for Agency. [philsci-archive:11956](#).
- 2016 Rätz, T.: Gone Till November: A disagreement in Einstein scholarship. In Sauer, T. and Scholl, R. (eds.): *The Philosophy of Historical Case Studies*. Boston Studies in Philosophy and History of Science. Springer.
- 2016 Scholl, R. and T. Rätz: Towards a Methodology for Integrated History and Philosophy of Science. In Sauer, T. and Scholl, R., (eds.): *The Philosophy of Historical Case Studies*. Boston Studies in Philosophy and History of Science. Springer
- 2014 Rätz, T. and T. Sauer: Ein Zyklenmodell der Anwendung von Mathematik. In Ralf Krömer und Gregor Nickel (Hrsg.): *Siegener Beiträge zur Geschichte und Philosophie der Mathematik* 4.
- 2013 Rätz, T.: Comment on “The Undeniable Effectiveness of Mathematics in the Special Sciences”. In M. C. Galavotti, S. Hartmann, M. Weber, W. Gonzalez, D. Dieks, and T. Uebel, eds., *New Directions in the Philosophy of Science*. Springer.

#### Reviews

- 2015 Rätz, T.: Noson S. Yanofsky (2013): The Outer Limits of Reason. What Science, Mathematics, and Logic Cannot Tell Us. *Dialectica*.

#### Thesis

- 2014 Rätz, T.: “On the Applicability of Mathematics – Philosophical and Historical Perspectives”. Ph.D. thesis. University of Lausanne.

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## Presentations (selected)

- 11/2021 *On Model Interpretability* at the Workshop “Machine Learning Meets Philosophy of Science”, University of Tübingen, November 11.
- 03/2021 *Group Fairness: Independence Revisited* at the ACM Conference on Fairness, Accountability, and Transparency (FAccT ’21), Virtual Event, Canada, March 1–10
- 09/2020 *Algorithmic Decision Making and Social Justice. On the Morals of Predictive Modeling* (with Corinna Hertweck) at the 5th European COST Conference on Artificial Intelligence in Finance and Industry, ZHAW Zürich, September 3.
- 08/2020 *The Impact of Statistics and Machine Learning on Understanding in Climate Modeling* (with Julie Jebeile and Vincent Lam) at the conference “Data Science in Climate and Climate Impact Research”, ETH Zürich, August 21.
- 11/2019 *Understanding of DNNs, Understanding with DNNs, and Climate Modeling* at the Workshop “Big data, machine learning, climate modelling & understanding”, University of Bern, November 15.
- 6/2018 *Euler’s Königsberg: The Explanatory Power of Mathematics* at the Workshop “Mathematics and Mathematization of Physical Theory: Historical and Conceptual Aspects”, University of Mainz, June 22 to 23.
- 2/2016 *The Volterra Principle Generalized* (in German) at the Oberseminar Geschichte der Mathematik und der Naturwissenschaften, University of Mainz, February 2.
- 5/2015 *Euler’s Königsberg: The Explanatory Power of Mathematics* at the Workshop “New Work on Explanation and Understanding”, MCMP Munich, May 1.
- 10/2014 *Mathematische Modelle in der Finanzwissenschaft* at the Kolloquium Wissenschaftsphilosophie, University of Bern, October 29.
- 06/2014 *Towards a Methodology for Integrated History and Philosophy of Science* (with Raphael Scholl, University of Bern) Integrated History and Philosophy of Science – &HPS5, University of Vienna, June 26 to 28.
- 07/2013 *Applying an Account of the Applicability of Mathematics to the World* (with Tilman Sauer, CalTech and University of Bern) at the Foundations of Physics Conference in Munich, Germany, July 29 to 31.

- 11/2012 *Comment on Mark Colyvan: The Ins and Outs of Mathematical Explanation* at the Workshop “Causation, Dispositions and Probabilities in Physics and Biology” in Lausanne, Switzerland, November 22 - 24.
- 10/2012 *The Applicability of Mathematics* at the Workshop “Metaphysics of science: objects, relations and structures” in Lausanne, Switzerland, October 12-13.
- 11/2011 *Mathematics and Causality* at the Workshop “Causality and Mechanisms in Philosophy of Science” in Berne, Switzerland, November 24-25.
- 10/2011 *Why do we Model?* (with Raphael Scholl, University of Bern) at the European Philosophy of Science Association Conference in Athens, Greece, October 5–8.

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## Refereeing

Apidologie, British Journal for Philosophy of Science, Erkenntnis, European Journal for Philosophy of Science, Grazer Philosophische Studien, Journal for General Philosophy of Science, Minds & Machines, Philosophia Mathematica, Philosophy of Science, Science of Nature (Naturwissenschaften), Synthese, Dialectica (former member Editorial Committee).