

# Tim Rätz

## Curriculum Vitae

Institute of Philosophy  
University of Bern  
Switzerland  
✉ [tim.raez@posteo.de](mailto: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)

- forthc. Rätz, T.: Understanding Deep Learning With Statistical Relevance. *Philosophy of Science*.
- forthc. 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)

- 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

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