

Karen Crowther

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- Specialisation** Philosophy of physics; philosophy of science
- Competence** Metaphysics; philosophy of mathematics
- Employment**
- Associate Professor**
Department of Philosophy, Classics, History of Art and Ideas, University of Oslo 2019–
- Postdoctoral Associate**
Department of Philosophy, University of Geneva 2016–2019
- Postdoctoral Associate**
Department of Philosophy, University of Pittsburgh 2014–2015
- Education**
- PhD in Philosophy, University of Sydney, 2015
BA. (Hons) in Philosophy (Minor: Theology), Monash University, 2009
BSc. (Hons) in Physics (Minor: Mathematics), Monash University, 2008
Exchange Student, Uppsala University, 2006
Visiting Student, University of Cambridge, 2012, 2013
- PhD Thesis** “Appearing out of nowhere: The emergence of spacetime in quantum gravity”.
Supervisors: Huw Price and Dean Rickles.
Committee: Jonathan Bain, Eleanor Knox, and Christian Wüthrich.
- Monograph** Crowther, K. (2016) *Effective Spacetime: Understanding Emergence in Effective Field Theory and Quantum Gravity*, Springer.
- Edited Issues** Crowther, K., Linnemann, N., & Wüthrich, C., eds., (Forthcoming) “Special Issue on Spacetime Functionalism” in *Synthese*.
- Crowther, K. & Rickles, D., eds., (2014) “Special Issue on Principles of Quantum Gravity” in *Studies in History and Philosophy of Modern Physics*, 46, 135–227.
- Articles** Crowther, K, Linnemann, N. & Wüthrich, C. (2019) “What we cannot learn from analogue experiments”, *Synthese*, DOI: 10.1007/s11229-019-02190-0.
- Crowther, K. (2019) “When do we stop digging? Conditions on a fundamental theory of physics”, to appear in Anthony Aguirre, Brendan Foster, and Zeeya Merali, eds., *What is Fundamental?*, Springer.
- Crowther, K. (2018) “What is the point of reduction in science?”, *Erkenntnis*, DOI: 10.1007/s10670-018-0085-6.
- Crowther, K. (2018) “Defining a crisis: The role of principles in the search for quantum gravity”, *Synthese*, DOI: 10.1007/s11229-018-01970-4.

Crowther, K. (2018) “Inter-theory relations in quantum gravity: Correspondence, reduction and emergence”, *Studies in History and Philosophy of Modern Physics*, 63, 74–85.

Crowther, K. & Linnemann, N. (2017) “Renormalizability, fundamentality and a final theory: The role of UV-completion in the search for quantum gravity”, in *The British Journal for the Philosophy of Science*, DOI: 10.1093/bjps/axx052

Crowther, K. (2015) “Decoupling emergence and reduction in physics”, in *European Journal for Philosophy of Science*, 5(3), 419–445.

Crowther, K. & Rickles, D. (2014) “Introduction: Principles of quantum gravity” in *Studies in History and Philosophy of Modern Physics*, 46, 135–141.

Crowther, K. (2013) “Emergent spacetime according to effective field theory: From top-down and bottom-up” in *Studies in History and Philosophy of Modern Physics*, 44(3), 321–328.

Book Reviews

Crowther, K. (2019) “Art, Politics, and Particle Physics With One Eye on the Past”, Review of Steven Weinberg’s ‘Third Thoughts’, *Metascience*.

Crowther, K. (2019) “Review of Silberstein et al. ‘Beyond the Dynamical Universe’”, *British Journal for Philosophy of Science*, <http://www.thebsps.org/2019/01/beyond-the-dynamical-universe/>

Crowther, K. (2018) “Review of Carl Gillett’s ‘Reduction and Emergence in Science and Philosophy’ ”, *Philosophy*, 93(4), pp. 586–590.

Presentations

TBC

- Conference on the Foundations of Cosmology and Quantum Gravity (New York University Abu Dhabi, January 2020)*
- Metaphysics of Spacetime Emergence (University of Geneva, June 2020)*
- Philosophy of Time: From Theory to Practice (University of Kent, June 2020)*

“The role of the holographic principle in the search for new physics”

- Irvine-Munich-PoliMi-Salzburg Conference in Philosophy and Foundations of Physics (Salzburg University, September 2019)*

“Levels of fundamentality in the metaphysics of physics”

- LangCogSci Research Seminar (University of Lisbon, May 2019)*
- Levels of Explanation Workshop (Birmingham University, April 2019)*

“As below, so before: synchronic and diachronic conceptions of spacetime emergence”

- Non-Empirical Theory Assessment: How Far Does it Reach and Where Could it Stumble? (Stockholm University, June 2019)*
- LangCogSci Research Seminar (University of Lisbon, May 2019)*
- Emergence: Conceptual and Philosophical Aspects (Amsterdam, May 2019)†
- The Meanings of Emergence Workshop (University of Turin, March 2019)*
- New Topics in Quantum Foundations (University of Lausanne, November 2018)*
- Diachronic Emergence Conference (University of Cologne, October 2018)*

- Boston Colloquium for the Philosophy of Science (Boston University, October 2018)*
- “What we cannot learn from analogue experiments”
- British Society for Philosophy of Science Annual Meeting (Durham University, July 2019)†
 - Non-Empirical Theory Assessment (University of Stockholm, June 2019)*
 - Oxford Philosophy of Physics Seminar (University of Oxford, March 2019)*
 - Swiss Philosophy of Physics Meeting (University of Bern, November 2018)
 - First Irvine-Munich-PoliMi-Salzburg Conference in Philosophy and Foundations of Physics (University of Salzburg, September 2018)†
- “Scale invariance and fundamentality”
- Observers in the Cosmos: The Role of Scale and Time (University of Bristol, May 2018)*
- “In what respects is a bathtub like a black hole? We don’t know”
- PhilEAS Seminar (Undergraduate Philosophy Students Society) (University of Geneva, March 2018)*
- “When do we stop digging? Conditions on a fundamental theory of physics”
- Fundamentality in Metaphysics and Physics Workshop (University of Geneva, May 2018)*
 - Beyond Spacetime Seminar (University of Geneva, December 2017)*
- “Fundamentality and emergence in quantum gravity”
- Spacetime: Fundamental or Emergent? Workshop (University of Bonn, October 2017)*
- “What is the problem of quantum gravity?” (part of symposium *Towards a Methodology of Quantum Gravity*, organised by Keizo Matsubara)
- The European Philosophy of Science Association (EPSA) Conference (University of Exeter, September 2017)†
- “Emergence as an inter-theory relation in quantum gravity” (part of symposium *The Metaphysics of Spacetime Emergence*, organised by Baptiste Le Bihan)
- European Congress of Analytic Philosophy (ECAP 9) Conference (Ludwig-Maximilians University of Munich, August 2017)†
- “Understanding the emergence of spacetime from quantum gravity”
- Conference on the Philosophical Foundations of Quantum Gravity (University of Geneva, June 2017)†
- “Emergence, reduction, and correspondence in quantum gravity”
- Cosmology and the Future of Spacetime Conference (Western University, Ontario, June 2017)*
- “On principles of theory construction and justification in quantum gravity” (with Niels Linnemann)
- European Congress of Analytic Philosophy (ECAP 9) Conference (Ludwig-Maximilians University of Munich, August 2017)†

- Reasoning in Physics Workshop (Ludwig-Maximilians University of Munich, December 2016)[†]
- “The role of UV completion in the search for quantum gravity” (with Niels Linnemann)
- The British Society for the Philosophy of Science (BSPS) Annual Conference (Edinburgh, July 2017)[†]
 - Metaphysics and Physics: Methodological Links Conference (University of Lausanne, November 2016)[†]
- “Coming to terms with the breakdown of spacetime”
- International Summer Institute in Philosophy of Physics on the Philosophy of Quantum Gravity (Williams Bay, Wisconsin, June 2016)
- “The Correspondence Principle in Quantum Gravity”
- Beyond Spacetime Seminar (University of Illinois at Chicago, April 2016)
- “Decoupling emergence and reduction in physics”
- Effective Theories, Mixed Scale Modeling and Emergence Conference (University of Pittsburgh, October 2015)[†]
- “Novelty and autonomy as alternatives to, or bases for, a conception of emergence in physics”
- Reduction and Emergence in the Sciences Conference (Munich Centre for Mathematical Philosophy, November 2013)[†]
 - Serious Metaphysics Seminar (University of Cambridge, February 2013)
- “Emergent spacetime in (condensed matter approaches to) quantum gravity”
- Philosophy of Science Seminar (Ludwig-Maximilians University of Munich, November 2013);
 - HPS Research Presentation Day (University of Sydney, May 2012)
- “Effective spacetime”
- Serious Metaphysics Seminar (University of Cambridge, October 2013)
- “Comments on Oriti’s ‘Disappearance and emergence of space and time in quantum gravity’”
- Quantum Gravity in Perspective Conference (Munich Centre for Mathematical Philosophy, June 2013)[†]
- “Effective field theory, emergence, and fundamental physics”
- Australasian Association of Philosophy Conference (University of Otago, July 2011)[†]

*invited presentations [†]peer-reviewed

Awards

Third prize FQXi Essay Contest, “What is ‘Fundamental’?”	2017
Swiss National Science Foundation Grant for Interdisciplinary Project (in collaboration with Christian Wüthrich (PI) and Niels Linnemann, University of Geneva)	2016
Visiting honorarium, Spacetime After Quantum Gravity Research Group (University of Illinois at Chicago)	2015
Lucy Firth Publication Prize in Philosophy (Sydney)	2013
Lucy Firth Publication Prize in Philosophy (Sydney)	2012
Andrew Donald Campbell Memorial Prize (Sydney)	2010

Australian Postgraduate Award Scholarship (Sydney)	2010
Camo Jackson Prize for Honours in Philosophy (Monash)	2009
Faculty of Arts Honours Study Assistance Scholarship (Monash)	2009
Faculty of Arts Dean's Recognition Award (Monash)	2009
Golden Key International Honours Society Membership	2005

Professional Service

Committee/Assistant:

- Workshop on the Epistemology of Analogue Experiments, University of Geneva, September 2019
- The European Philosophy of Science Association (EPSA) Conference, University of Geneva, September 2019
- The British Society for Philosophy of Science (BSPS) Conference, Durham University, July 2019
- Spacetime Functionalism Workshop, University of Geneva, March 2018
- Conference on the Philosophical Foundations of Quantum Gravity, University of Geneva and University of Illinois at Chicago, June 2017
- Effective Theories, Mixed Scale Modeling and Emergence Conference, University of Pittsburgh, October 2015
- Free Will and Retrocausality in a Quantum World Conference, Trinity College, University of Cambridge, July 2014

Convener:

- Sydney Foundations of Physics Seminar Series, University of Sydney, 2011

Discussion group leader:

- "Analogue Experiments and Simulation", at the First Biennial Midwest Summer School in Philosophy of Physics, Chicago, 2018
- "Emergence and Correspondence", at the International Summer Institute in Philosophy of Physics on the Philosophy of Quantum Gravity, Wisconsin, 2016

Referee/Expert: *Philosophy Compass; Scientific American; Philosophy of Science; British Journal for Philosophy of Science; European Journal for Philosophy of Science; Studies in History and Philosophy of Modern Physics; Inquiry; Synthese; Journal for General Philosophy of Science; Beyond Spacetime essay contest; Oxford University Press*

Teaching Experience

Lecturer/Organiser:

- Philosophy of Physics Masters Seminar, University of Geneva, Fall 2018 (co-taught with Christian Wüthrich and Niels Linnemann)
- Philosophy of Physics Masters Seminar, University of Geneva, Fall 2017 (co-taught with Christian Wüthrich)

Teaching Assistant/Laboratory Demonstrator:

- Sutton Trust Summer School (Physics), University of Cambridge, 2014
- Experience Cambridge (Physics and Engineering), University of Cambridge, 2014
- IA Physics, Cavendish Laboratory, University of Cambridge, 2013
- PHIL1013 *Society, Knowledge and Self*, University of Sydney, 2012; 2011
- PHYS1011/PHYS1902/PHYS1003 *Junior Physics Laboratory*, University of Sydney, 2012; 2011; 2010

- PHYS1003 *Physics 1 (Technological)*, University of Sydney, 2010
- PHYS1011/PHYS1022 *Physics*, Monash University, 2008; 2009

Guest lectures:

- “Heisenberg’s Atomic Physics and Causal Law” for Examen Philosophicum, University of Oslo, September 2019
- “Fundamentality in Physics” for Fundamentality Masters Seminar, University of Geneva, November 2018
- “Introduction to Quantum Gravity” for Science of Space and Time, Hampshire College, December 2017
- “The Holographic Principle” for Philosophy of Physics Masters Seminar, University of Geneva, March 2017
- “Newton’s Absolute Space” for Philosophy of Physics Masters Seminar, University of Geneva, November 2016
- “Time Travel for Beginners” for the Sutton Trust Summer School (Philosophy and Theology), University of Cambridge, July 2013
- “The Emergence of Spacetime in Quantum Theories of Gravity” for HPSC4101 *Philosophy of Physics*, University of Sydney, May 2011