

Martin L. King | Curriculum Vitæ

Ludwig-Maximilians-Universität München
Munich Center for Mathematical Philosophy
Ludwigstr. 31, Rm. 126
80539 München

m.king@lmu.de
philphys.com

Areas of Specialisation and Competence

AOS Philosophy of Science, Philosophy of Physics, Philosophy of AI
AOC 20th Century Analytic, Logic, Modern Philosophy

Academic Employment

2022–2025 Postdoctoral Fellow, Munich Center for Mathematical Philosophy,
Ludwig-Maximilians-Universität München
Project: Deep Learning in Particle Physics: A Philosophical Examination
2016–2022 Postdoctoral Researcher, Physics Institute, University of Bonn, Bonn, Germany
Project: Epistemology of the LHC: Model Building and Dynamics
Principle Investigator: Prof. Peter Mättig

Education

2016 PhD (Philosophy), University of Guelph, Guelph, ON
Thesis: Scientific Explanation: Towards a Neo-Deductivist Account
Supervisor: Andrew Wayne
2010 M.A. (Philosophy), Concordia University, Montréal, QC
Thesis: Speculative Philosophy and the Grounding of Metaphysics
Supervisor: Susan Hahn
2007 B.A. (Philosophy Hon.), Concordia University, Montréal, QC

Publications

Journal Articles

8. Doing More with Less: Dark Matter & Modified Gravity (2023) in: Mills Boyd, N., De Baerdemaeker, S., Heng, K., Matarese, V. (eds) *Philosophy of Astrophysics* Synthese Library, Vol. 472. pp. 91–107, DOI: 10.1007/978-3-031-26618-8-6
7. Introduction: Simplicity out of complexity?: physics and the aims of science, (Forthcoming) *Synthese Topical Collection* vol. 199, with F. Boge, P. Grünke, and M. A. Carratero Sahuquiho.
6. Universality is not Universal: how much can we explain with falsehoods? (2022) *Metascience*
5. Bottoms Up: The Standard Model Effective Field Theory from a Model Perspective (2022) *Studies in History and Philosophy of Science* 92, pp. 129–143, with P. Bechtle, C. Chall, M. Krämer, P. Mättig, and M. Stöltzner.
4. Conjectures and Disconfirmations: Confirming the Standard Model Higgs (2021) *Erkenntnis*, DOI: 10.1007/s10670-021-00473-y
3. Explanations and candidate explanations in physics (2020) *European Journal for Philosophy of Science*, 10(1) pp. 1–17.
2. From a Boson to the Standard Model Higgs: a Case Study in Confirmation and Model Dynamics (2018) *Synthese SI: Reasoning in Physics*, pp. 1–33, with C. Chall, P. Mättig, and M. Stöltzner.
1. On structural accounts of model-explanations (2016) *Synthese*, 193(9) pp. 2761–2778.

Edited Volumes

1. *Simplicity out of Complexity? Physics and the Aims of Science* Synthese Topical Collection. ISSN: 1573-0964.

Manuscripts under Review

1. Deep Learning as Model Independence.
2. Abstraction, Explanation, and Effective Field Theories.
3. The End of the Theory-driven Era: 50 Years of Particle Physics, with N. Boddenberg and M. Stöltzner.
4. Pluralism about Progress, with N. Boddenberg, P. Maettig, and M. Stöltzner.

Manuscripts in Preparation

1. Shallow Explanations and Deep Learning
2. Theoretical Virtues and the Pursuit of Ugly Models
3. The Beampipe Pipeline: Data and Machine Learning in Particle Physics
4. Machine Learning: A New Case for Inductivism
5. Mechanisms in Quantum Field Theory, with M. Stöltzner.

Teaching

Courses and Seminars

Graduate

University of Bonn, Bonn, Germany	
Winter 2018/19	Philosophy of Biology
Winter 2017/18	Philosophy of Physics

Undergraduate

LMU Munich	
Summer 2024	AI, Science, and Big Data
University of Bonn, Bonn, Germany	
Summer 2024	AI, Science, and Big Data
Winter 2021/22	History of the Scientific Method
Winter 2020/21	Science, Values, and Policy
Summer 2020	Scientific Explanation
McMaster University, Hamilton, ON	
Summer 2016	Critical Thinking
University of Guelph, Guelph, ON	
Spring 2014	Elementary Symbolic Logic

Other

13-18.03.2022	Scientific Ideals and Values in Science, Working Group Leader Epistemology of the LHC Spring School: Philosophy of Large Experiments, Wuppertal, Germany
23-30.07.2018	Philosophy of Models in Particle Physics, Working Group Leader Epistemology of the LHC Summer School: Particle Physics at the Crossroads, Wuppertal, Germany
2014–2105	Critical Analysis and Reasoning Skills, MCAT Preparatory Course, The Princeton Review

Graduate Teaching Assistant

2011–2016	University of Guelph, Guelph, ON
2008–2010	Concordia University, Montréal, QC

Select Recent Presentations

Contributed Presentations

05.10.2023	Deep Learning as Model Independence 15th Ontologia, San Sebastian, Spain
19.09.2023	Theoretical Virtues and the Pursuit of Ugly Models The 9th biennial meeting of the European Philosophy of Science Association, Belgrade, Serbia
23.11.2022	Theory Choice in the Age of Models

Theoretical Virtues and Non-Empirical Guides in Scientific Theory Development, Aarhus, Denmark

14.11.2021 Abstraction, Explanation, and Effective Field Theories
27th Philosophy of Science Association, Baltimore, USA

29.10.2021 The Rise of Model Independence
20th Foundations of Physics, Paris, France

16.09.2021 Realism and Representation in the Search for New Physics
Symposium: Models in Particle Physics: Three Challenges to Realism
8th Biennial European Philosophy of Science Association, Turin, Italy

05.07.2021 Realism and Representation in the Search for New Physics
Symposium: Models in Particle Physics: Three Challenges to Realism
British Society for Philosophy of Science 2021, Kent, UK

19.09.2020 Explanations with and of the Standard Model Higgs
Ernst Mach Workshop IX, Prague

11.09.2019 Explanation and Effective Field Theories
7th Biennial European Philosophy of Science Association 2019, Geneva

10.08.2019 Confirmation via Disconfirmation
Congress of Logic, Mathematics, and Philosophy of Science and Technology 2019, Prague

19.07.2019 Explanation and Effective Field Theories
Symposium: Effective Field Theories: Top-down and Bottom-up
British Society for Philosophy of Science 2019, Durham, UK

04.06.2019 Confirming the Minimal Higgs Sector
2019 Canadian Philosophical Association, Vancouver, BC

03.06.2019 Explanation and Effective Field Theories
2019 Canadian Society for History and Philosophy of Science, Vancouver, BC

25.02.2019 Explanation and the Rise of Model Independence
Symposium: Models in High Energy Physics
German Society for Philosophy of Science, Cologne, Germany

02.11.2018 Bona Fide Explanations in Physics
26th Philosophy of Science Association, 2018, Seattle, WA

03.10.2018 Ontological Aspects of Effective Quantum Field Theories
Congress of Ontology XIII: Physics and Ontology, San Sebastian, Spain

04.07.2018 La Confirmation du Boson de Higgs
VIIème Société pour la Philosophie des Sciences, Nantes, France

17.03.2018 Explanatory Models: A Framework for Instrumentalism
Models and Simulations 8, Columbia, SC

05.08.2015 On Structural Accounts of Model Explanations
15th Congress of Logic, Mathematics, and Philosophy of Science, Helsinki, Finland

05.11.2014 Idealization and Structural Explanation in Physics
24th Philosophy of Science Association, 2014, Chicago, IL

Invited Presentations

27.09.2023	Theoretical Virtues and the Pursuit of Ugly Models Cambridge-LMU Joint Workshop on Philosophy of Science, Cambridge, UK
27.04.2023	Deep Learning as Model Independence Philosophy of Science Conference, Dubrovnik, Croatia
25.05.2022	Confirming Minimal Supersymmetry with the Higgs Philosophy of Supersymmetry, Stockholm, Sweden
18.03.2021	Particle Physics at the Crossroads Möbius Seminar, Astroparticles and Cosmology Laboratory, University of Paris/CNRS, Paris, France
26.06.2019	The Rise of Model Independence Bonn History and Philosophy of Physics Seminar, Bonn, Germany
03.12.2018	Confirming the Minimal Higgs Sector Bonn Philosophy of Science Colloquium, Bonn, Germany
18.04.2018	Confirmation of the SM Higgs Boson Philosophy of Science Conference, Dubrovnik, Croatia
21.12.2017	Model-Explanations Bonn-Cologne Philosophy of Science Colloquium, Cologne, Germany
26.04.2017	Explanatory Models in Particle Physics Interdisciplinary Centre for Science and Technology Studies Colloquium Series, Wuppertal, Germany

Awards, Grants, and Scholarships

2022–2025	Deutsche Forschungsgemeinschaft (DFG) Eigenestelle – Postdoctoral Fellowship \$464,000
2013–2016	Ontario Graduate Student Scholarship (×3) \$45,000
2013–2015	College of Arts Travel, Research, and Creation Award (×4) \$3,000
2011–2012	Dean's Scholarship (×2) \$6,750
2011–2012	Board of Graduate Studies Research Scholarship (\$2,000)

Professional Service

Peer Reviewer

- *Studies in History and Philosophy of Modern Physics*
- *Studies in History and Philosophy of Science*
- *Synthèse*
- *International Studies in Philosophy of Science*
- *European Journal for Philosophy of Science*

Executive Positions

2011–2015	President, Philosophy Graduate Student Association
2013–2016	Treasurer, Executive Committee of Philopolis Guelph
2011–2012	Vice President Finance, Philosophy Graduate Student Association

Member Positions

2012–2016	Board of General Directors, Graduate Student Association
2014–2016	Bargaining Committee, CUPE Local 3913
2014–2016	University of Guelph Public Transit Committee
2013–2014	University of Guelph Special Grants and Speaker's Fund
2012–2013	University of Guelph Judicial Committee

Conference Organisation

2021	Workshop: Beyond Models, Bonn, Germany
2012–2015	Philopolis Guelph (annual conference), Guelph, ON Executive Committee Member
2013	Crisis: Politics at the Limits of Civil Society, Guelph, ON Guelph PGSA Conference - organising member, Guelph, ON

Languages

English	Native
French	Native
German	Proficient (B2)

References

Andrew Wayne	Associate Professor, University of Guelph (PhD Supervisor) Email: awayne@uoguelph.ca
Michael Stöltzner	Associate Professor, University of South Carolina Email: stoeltzn@mail.usc.edu
Dennis Lehmkuhl	Professor, University of Bonn Email: dennis.lehmkuhl@uni-bonn.de