

Robert Hugh Caldwell Moir

CONTACT INFORMATION	Department of Applied Mathematics Western University Rm 275A, Middlesex College 1151 Richmond Street, North London, Ontario N6A 5B7	Voice: +1 519-661-3649 E-mail: robert@moir.net Website: phenomenologica.com
CITIZENSHIP	Canada, United Kingdom	
EDUCATION	PhD, Applied Mathematics Western University , London, Canada Thesis (tentative title): <i>Feasible Computing for Validated Knowledge: Continuity and Stability in Symbolic and Numeric Computation</i> Supervisor: Robert Corless, with Marc Moreno Maza	2013-2016
	PhD, Philosophy Western University , London, Canada Thesis: <i>Structures in Real Theory Application: A Study in Feasible Epistemology</i> Supervisors: Robert Batterman and John Bell Examiners: William Harper, Chris Smeenk and Mark Wilson	2004-2013
	MSc, Applied Mathematics Western University , London, Canada Thesis: <i>Reconsidering Backward Error Analysis for Ordinary Differential Equations</i> Supervisor: Robert Corless	2009-2010
	MA, Philosophy Western University , London, Canada	2003-2004
	BA, Mathematics and Philosophy (<i>First Class Joint Honours</i>) McGill University , Montréal, Canada Honours Thesis: <i>Infinity and Physical Theory</i> Supervisor: Michael Hallett	2001-2003
	BSc, Physics (minor Chemistry) (<i>First Class Honours</i>) McGill University , Montréal, Canada	1995-2001
AREAS OF SPECIALIZATION	Applied Mathematics, Philosophy of Applied Mathematics, Philosophy of Physics	
AREAS OF COMPETENCE	Logic, Philosophy of Mathematics, Philosophy of Science	
AWARDS AND DISTINCTIONS	<i>ACADEMIC AWARDS</i> Canadian Society for the History and Philosophy of Mathematics <ul style="list-style-type: none">• CSHPM Annual Conference (held at MathFest 2013): Best Contributed Paper by a Graduate Student (\$750), 2013 Chemical Institute of Canada National High School Chemistry Examination <ul style="list-style-type: none">• Toronto District Winner, 1995	

RESEARCH AWARDS

Government of Ontario, Western University

- Queen Elizabeth II Graduate Scholarship in Science and Technology (\$15,000), 2015-2016

Western University

- Western Graduate Research Scholarship (\$8,000/a), 2013-2015

Department of Applied Mathematics, Western University

- PhD Entrance Scholarship (\$2,500), 2013-2014

University of Pittsburgh

- Visiting Scholar (\$26,000), 2011-2012

Western University

- Western Graduate Research Scholarship (\$8,000), 2009-2010

Social Sciences and Humanities Research Council of Canada

- Doctoral Fellowship (\$40,000), 2007-2009

Western University

- Western Graduate Research Scholarship (\$8,000), 2005-2006

Western University

- Special University Scholarship (\$13,000), 2003-2005

PUBLICATIONS

PROCEEDINGS

- **Moir, RHC, Corless, RM, Jeffrey, DJ, (2014). “Unwinding Paths on the Riemann Sphere for Continuous Integrals of Rational Functions.” In: Elias, J, Fernández-Sánchez, J, and Sombra, M (Eds.), *Proceedings de Encuentro de Álgebra Computacional y Aplicaciones (EACA) XIV* (EACA trans: Meeting on Computer Algebra and Applications), Barcelona, June 2014, pp. 139-142.
- *Moir, RHC. (2013). “Rational Discovery of the Natural World: An Algebro-Geometric Response to Steiner.” In: A. Cupillari (Ed.), *Proceedings of the Canadian Society for History and Philosophy of Mathematics*, Hartford CT, July 2013, pp. 43-59. (also under review for peer-reviewed publication)
- *Moir, RHC. (2009). “The Conversion of Phenomena to Theory: Lessons on Applicability from the Early Development of Electromagnetism.” In: Cupillari, A (Ed.), *Proceedings of the Canadian Society for History and Philosophy of Mathematics*, St John’s NL, June 2009, pp. 68-91.

**Peer-reviewed *Abstract Submission

DISSERTATIONS

- Moir, RHC (2013). “Structures in Real Theory Application: A Study in Feasible Epistemology.” *University of Western Ontario - Electronic Thesis and Dissertation Repository*. Paper 1578.

POSTERS

- Batterman, RW, Fillion, N, Moir, RHC, Overton, J (2010). “Idealization in Scientific Explanation.” Western Research Day, Western University, March 24, 2010. Poster 1.

- †(2016) “The Practical Computational Character of (Pure and Applied) Mathematical Inference.” Workshop on Philosophy of Applied Mathematics, IHPST, Université Paris 1—Panthéon-Sorbonne, Paris, May 23-27.
- (2015) “Effectively Valid Inference in Computational Mathematics.” Algorithms and Complexity in Mathematics, Epistemology and Science (ACMES) Conference, Western University, London, Ontario, May 6-8.
- †(2014) with Corless, RM, Jeffrey, DJ. “Unwinding Paths on the Riemann Sphere for Continuous Integrals of Rational Functions.” 20th Conference on Applications of Computer Algebra, Fordham University, New York City, Jul 9-12.
- ** (2014) with Corless, RM, Jeffrey, DJ. “Unwinding Paths on the Riemann Sphere for Continuous Integrals of Rational Functions.” Encuentro de Álgebra Computacional y Aplicaciones XIV (EACA—Meeting on Computer Algebra and Applications), Institut d’Estudis Catalans, Barcelona, June 18-20.
- * (2013) “Rational Discovery of the Natural World: An Algebro-Geometric Response to Steiner” MathFest 2013/Canadian Society for the History and Philosophy of Mathematics (MathFest 2013/CSHPM) Conference, Hartford CT, 1-3 August.
- * (2011) with Corless, RM. “Computation for Confirmation.” Conference on The Plurality of Numerical Methods and their Philosophical Analysis. Université Paris 1—Panthéon-Sorbonne, Paris, November 3-4.
- †(2010) “Computation in Scientific Explanation,” in the course Contemporary Philosophy of Science, Department of Philosophy, University of Guelph, 17 November.
- * (2010) with Fillion, N. “Explanation and Abstraction: The Case of Backward Error Analysis” Philosophy of Science Association (PSA) Biennial Meeting, Montréal, Québec, 4-6 November.
- * (2010) with Fillion, N. “Modeling and Explanation: Lessons from Modern Error Theory.” Canadian Society for the History and Philosophy of Science (CSHPS) Conference, Concordia University, Montréal, Québec, 28-30 May.
- (2010) with Fillion, N. “A Step Forward with Backward Error,” PGSA Colloquium Series, Department of Philosophy, Western University, 12 March.
- * (2009) “The Conversion of Phenomena to Theory: Lessons on Applicability from the Development of Electromagnetism.” Canadian Mathematical Society/Canadian Society for the History and Philosophy of Mathematics (CMS/CSHPM) Conference, Memorial University, St. John’s, Newfoundland, 6-8 June.
- * (2008) “Theories, Models and Representation: Lessons from Solid State Physics.” Canadian Society for the History and Philosophy of Science (CSHPS) Conference, University of British Columbia, Vancouver, British Columbia, 3-5 June.

POSTERS

- * (2011) “Dynamics Backward: Backward Error Analysis for Ordinary Differential Equations.” Epistemology of Modeling & Simulation National Conference, Pittsburgh, 1-3 April.
- (2008) “Theories, Models and Representation: Lessons from Solid State Physics.” Western Research Day, 28 March, and Arts and Humanities Research Day, 2 April.

†Invited **Peer-reviewed *Abstract Submission

ACADEMIC
EXPERIENCE

INSTRUCTOR

Western University 2010-2013

- Metaphysics and Epistemology of Witchcraft (Full-Year Course), 2012-2013
- Introduction to Logic (12-week Accelerated, full-year course equivalent), 2011
- Critical Thinking (Full-Year Course), 2010–2011

TEACHING ASSISTANT

Western University 2003-2014

- Intermediate Calculus II (Half-Year Course), 2014
- Numerical Analysis (Half-Year Course), 2014
- Graduate Introduction to Numerical Methods (Half-Year Course), 2013
- Linear Algebra for Engineers (Half-Year Course), 2010
- Calculus (Half-Year Course), 2009
- Introduction to Philosophy (Full-Year Course), 2005–2006, 2007–2008
- Critical Thinking and Reasoning (Full-Year Course), 2003–2005

WORKSHOP LEADER

Rotman Institute of Philosophy 2008-2009

- Modern Mathematics for Philosophers (Algebra and Analysis), 2008-2009

RESEARCH ASSISTANT

Western University 2007-2014

- Robert Corless, Department of Applied Mathematics, 2009–2010, 2013–2014
- Rotman Canada Research Chair in Philosophy of Science, 2009–2010
- Rotman Institute of Philosophy, 2008-2009

CONFERENCE
ORGANIZATION

PROFESSIONAL CONFERENCES

Conference Coordinator and Organizer 2014-2015

- Algorithms and Complexity in Mathematics, Epistemology and Science (ACMES)
Co-organizer with Corless R, Smeenk, C and Fillion, N.
Depts. of Applied Math and Philosophy, Western University, May 6-8, 2015.
Funding provided by:
 - Fields Institute for Research in Mathematical Sciences
 - Rotman Institute of Philosophy

GRADUATE CONFERENCES

Conference Organizer 2006

- 7th Annual Logic, Mathematics, and Physics Graduate Philosophy Conference
Co-organizer with Noland, J and MacDonald, D, 2006.
Department of Philosophy, Western University,
Keynote Speaker: Michael Hallett (McGill University)

SERVICE

PROGRAMMING

- *Game Theory Simulation Programmer* 2014
University Course “Game Theory and Social Structure”,
Departments of Economics, Philosophy and Applied Mathematics,
Western University.

WORKSHOPS

- *Workshop Leader* 2009-2010
A Survey of Mathematical Modeling,
Department of Philosophy, Western University.

ASSOCIATIONS & SOCIETIES

- *Webmaster and Email Coordinator* 2004-2006
Philosophy Graduate Students Association (PGSA), Western University.

GRADUATE COURSEWORK

APPLIED MATHEMATICS

- Advanced Numerical Analysis (Corless, R)
- Asymptotics and Special Functions (Corless, R)
- Game Theory and Social Structure (Streufert, P, Harper, W)*
- Integration in Finite Terms (Corless, R)
- Mathematical Modeling and Simulation (Yu, P)
- Partial Differential Equations (Reid, G)
- Scientific Computation, (Denniston, C)

COMPUTER SCIENCE

- Distributed and Parallel Systems (Moreno Maza, M)

MATHEMATICS (PURE)

- Category Theory (Bell, JL)
- Set Theory and Model Theory (Bell, JL)
- Topos Theory (informal course) (Bell, JL)*

PHILOSOPHY

- Applicability of Mathematics (Reading Course) (Batterman, R)
- Category Theory (Bell, JL)*
- Explanation and Reduction (Batterman, R)
- Gravitation (Newton) (Harper, WL)
- Historical Development of Electromagnetism (Prospectus Course) (Batterman, R)
- Introduction to Philosophy of Mathematics (Seig, W)*
- Philosophy of Applied Mathematics (Batterman, R)*
- Philosophy of Mathematics (Bell, JL)
- Philosophy of Probability (Pitowsky, I)
- Philosophy of Quantum Mechanics (Myrvold, WM)
- Space and Time (DiSalle, R)
- The Completeness of Quantum Mechanics (Pitowsky, I)
- The Continuous and the Discrete (Bell, JL)
- Toposes and Local Set Theories (Bell, JL)
- 20th Century Philosophy of Science (DiSalle, R)*

PHYSICS

- Advanced Statistical Mechanics, (Grant, M)
- Gauge Theory (Burton, H)
- General Relativity (Myers, R)
- General Relativity (Valluri, SR)
- Particle Physics (Patel, P)
- Quantum Theory (Gale, C)
- Solid State Physics (Ryan, DH)

PLANETARY SCIENCE

- Impact Cratering: Processes and Products (Field Course) (Osinski, G)

* Audit

COMPUTING
SKILLS

Mathematical Programming

MATLAB: numerical computing system
MAPLE: symbolic and numerical computing system
OCTAVE: open source numerical computing system

Programming Languages

General Purpose

C: efficient code for scientific computing
C++: object-oriented design
Java: platform-independent object-oriented design

Parallel and Distributed Computing

MPI: multicore (CPU) programming extension for C, C++
CilkPlus: multicore (CPU) programming extension for C++
CUDA: manycore (GPU) programming extension for C, C++

Other

L^AT_EX Typesetting
web design with Joomla!
bash:~\$ cripting

MAIN
REFERENCES

Robert M Corless

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Last updated: April 8, 2016