

Alexander Lundervold

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Personal Data

Born: July 27, 1983 in Oslo, Norway
Citizenship: Norwegian

Employment

Associate Professor, Bergen University College, Norway, 2014–present
Postdoctoral researcher (Marie Curie fellow), Inria Bordeaux, France, 2013–2014
Temporary associate professor, Norwegian University of Science and Technology, 2011–2013
Doctoral research fellow, University of Bergen, 2007–2010
Teaching assistant, University of Bergen, 2003–2007

Education

PhD, Numerical analysis, University of Bergen, 2011. Thesis advisors: Hans Z. Munthe-Kaas (Bergen), Kurusch Ebrahimi-Fard (ICMAT, Spain). Evaluation committee: Martin Bordemann (LMIA, France), Ander Murua (EHU, Spain). Thesis title: *Lie-Butcher series and geometric numerical integration on manifolds*
MSc., Topology, University of Bergen, 2007. Thesis advisor: Bjørn I. Dundas. Thesis title: *Higher order cyclic homology for rational algebras*
BSc. Mathematics, University of Bergen, 2005

Publications

K. Ebrahimi-Fard, A. Lundervold, I. Mencattini, H.Z. Munthe-Kaas. *Post-Lie algebras and isospectral flows*, Symmetry, Integrability and Geometry: Methods and Applications (SIGMA), Volume 11, Issue 093, 2015
A. Lundervold, K. Ebrahimi-Fard and H.Z. Munthe-Kaas. *On the Lie enveloping algebra of a post-Lie algebra*, Journal of Lie Theory, Volume 25, Issue 4, 2015
A. Lundervold and H.Z. Munthe-Kaas. *On algebraic structures of numerical integration on vector spaces and manifolds*, IRMA Lectures in Mathematics and Theoretical Physics, Volume 21, 2015
K. Ebrahimi-Fard, A. Lundervold and D. Manchon. *Noncommutative Bell polynomials, quasideterminants and incidence Hopf algebras*, International Journal of Algebra and Computation, Volume 24, Issue 5, 2014
H.Z. Munthe-Kaas and A. Lundervold. *On post-Lie algebras, Lie-Butcher series and moving frames*, Foundations of Computational Mathematics, Volume 13, Issue 4, 2013
A. Lundervold and H.Z. Munthe-Kaas. *Backward error analysis and the substitution law for Lie group integrators*, Foundations of Computational Mathematics, Volume 13, Issue 2, 2013
K. Ebrahimi-Fard, A. Lundervold, S.J.A. Malham, H.Z. Munthe-Kaas, A. Wiese. *Algebraic structure of stochastic expansions and universally accurate simulation*, Proceedings of the Royal Society. Mathematical, Physical and Engineering Sciences, Volume 468 (2144), 2012

A. Lundervold and H.Z. Munthe-Kaas. *Hopf algebras of formal diffeomorphisms and numerical integration on manifolds*, Contemporary Mathematics, 539, 2011

A. Lundervold, A. Lundervold, H. Nordby, A.J. Lundervold, I. Reinvang. *Application of nonlinear time series analysis to single-trial ERPs*, Human Brain Mapping Conference, June 18–22, 2003, New York City.

Personal grants

ERCIM Alain Bensoussan Fellowship (Marie Curie Fellow), 2013

Abel Extraordinary Chair from the NILS Mobility Project, 2009

Abelstipend from the Norwegian Mathematical Society, 2005

Carl Johan Storetvedts legat (awarded to talented students at the University of Bergen), 2004

Current projects

Computational medicine: Numerical models for medical images and signals. <http://computationalmedicine.no>.

Structural and functional brain connectivity based on multimodal brain MRI recordings. A collaboration with the Dept. of Biomedicine, UiB

Development and evaluation of image-based biomarkers. A collaborative project with the Faculty of Health and Social Sciences, HiB

Idrett, helse, funksjon (Athletics, health, function). An interdisciplinary project at HiB. Especially involved in the subprojects *Simulation and modelling of the larynx* and *Healthy body, healthy mind: Multiparametrisk evaluering av muskelfunksjon, fysisk prestasjon og kognitiv funksjon – hva kan bilder og biomarkrer fortelle oss?*

Teaching Experience

Lecturer, HiB. MAT106 – Advanced mathematics for electrical engineers, 2016

Lecturer, HiB. MAT100 – Basic mathematics for engineers, 2015

Supervisor of the bachelor project *Tryg Maintenance App - A cross-platform application using Titanium, Alloy and Appcelerator Cloud Service* at the Dept. of Mathematics, Computation and Physics, HiB, 2015. (The project was awarded the 2016 “Best bachelor project” by the department)

Lecturer, HiB. MAT106 – Advanced mathematics for electrical engineers, 2015

Lecturer, HiB. MAT100 – Basic mathematics for engineers, 2014

Lecturer, NTNU. TMA4125 – Matematikk 4, 2013

Lecturer, NTNU. TMA4100 – Matematikk 1, 2012

Lecturer, NTNU. MA0002 - Bruerkurs B, 2012

Lecturer, NTNU. TMA4100 – Matematikk 1, 2011

Substitute lecturer in two lectures, UoB. MAT212 – Functions of several variables, 2010

Substitute lecturer in two lectures, Université de Strasbourg, France. Course: *Les algèbres de Hopf combinatoires en théorie quantique des champs perturbative*, 2009

Substitute lecturer in two lectures, UoB, MAT235 – Vector and tensor analysis, 2008

Teaching assistant, UoB. STAT101 – Elementary Statistics, 2007

Teaching assistant, UoB. MAT121 – Linear Algebra, 2007

Teaching assistant, UoB. MAT111 – Calculus I, 2006

Teaching assistant, UoB. MAT121 – Linear Algebra, 2006

Teaching assistant, UoB. MAT111 – Calculus I, 2005

Teaching assistant, UoB. MAT213 – Functions of a Complex Variable, 2005

Teaching assistant, UoB. MAT112 – Calculus II, 2004

Teaching assistant, UoB. MAT111 – Calculus I, 2003

Administrative Experience

Secondary proposer on the COST action proposal *Functional MR imaging for renal parenchymal disease*, OC-2016, 2016

Member of the organizing committee of the *10th MedViz conference* to be held September 7–9, 2016

Member of the organizing committee of the 2016 Abel Symposium on *Computation and Combinatorics in Dynamics, Stochastics and Control* to be held August 2016

Organizer of the *Bergen workshop on computational and applied mathematics: Mathematical modelling and computational medicine* <http://workshop2016.computationalmedicine.no>, January 18–19, 2016

Member of a working group on e-learning, Faculty of Engineering, HiB, 2015–

Project coordinator of an e-learning project supported by the Faculty of Engineering, HiB, 2015–

Course coordinator for MAT100, HiB, 2015–

Board member and treasurer, Bedriftidrettslaget at HiB, 2015–

Member of a working committee developing HiB's Faculty of Engineering's strategy for "profile and reputation 2016–2020", 2015

Secretary of the COCO2010 conference, ICMAT, Madrid, Spain, April–June, 2010

Member of the Department Council, UoB, 2010

Student Member of "Programstyret", UoB, 2006–2007

Student Member of the Library Council, UoB, 2005–2006

Student Member of the Department Council, UoB, 2006–2007

Travels and Conferences

Bergen workshop on computational and applied mathematics: Mathematical modelling and computational medicine, Bergen, Norway, January 18–19, 2016

Functional MRI for renal parenchymal disease: Ready for clinical practice?, Bordeaux, France, October 26–28, 2015

Workshop on Hopf algebras and causal sets, Laboratoire de Mathématiques Pures et Appliquées Joseph Liouville de l'Université du Littoral Côte d'Opale, Calais, France, January 15–16, 2015

Visit to Dominique Manchon, Laboratoire de Mathématiques, Université Blaise Pascal, Clermont-Ferrand, France, January 7–17, 2015

Visit to ICMAT to work on a NILS project, ICMAT, Madrid, Spain, October 5–11, 2014

Visit to IMUVA, Universidad de Valladolid, Spain, March 13, 2014

Visit to Kurusch Ebrahimi-Fard, ICMAT, Madrid, Spain, March 4–15, 2014

Visit to the Research group in Free Probability, Fachrichtung Mathematik, Universität des Saarlandes, Saarbrücken, Germany, February 23–25, 2014

Visit to Dominique Manchon, Université Blaise Pascal, Clermont-Ferrand, France, February 13–23, 2014

Visit to Hans Munthe-Kaas, University of Bergen, January 6–31, 2014

Visit to Dominique Manchon, Université Blaise Pascal, Clermont-Ferrand, France, October 29–December 13, 2013

Workshop on Renormalisation from Quantum Field Theory to Random and Dynamical Systems, University of Potsdam, Germany, November 7–9, 2013

School on Multiple Zeta Values, Multiple Polylogarithms and Quantum Field Theory, ICMAT, Madrid, Spain, October 7–11, 2013

SciCADE 2013, Valladolid, Spain, September 16–20, 2013

CEMRACS 2013 Summer School, Modelling and simulation of complex systems: stochastic and deterministic approaches, CIRM, Marseille, France, July 22–26, 2013

Visit to DAMTP, Centre for Mathematical Sciences, University of Cambridge, UK, December 4–8, 2011

Visit to Université Blaise Pascal, Clermont-Ferrand, France, May 9–13, 2011

MaGIC 2011, Finse, Norway, March 1–4, 2011

International Conference on Combinatorics and Control, La Cristalera, Spain, June 20–25, 2010

European Science Foundation’s Forward Look on Mathematics and Industry, Consensus Conference, Madrid, Spain, April 26–27, 2010

School on Combinatorics and Control, Benasque, Spain, April 12–16, 2010

Workshop on Combinatorics and Control, Madrid, Spain, April 6–9, 2010

Trimester on Combinatorics and Control, Madrid, Spain, April 6–June 25, 2010 (financed by the NILS grant)

MaGIC 2010, Ustaoset, Norway, March 2–5, 2010

Visit to Universidad de Zaragoza, Zaragoza, Spain, February 15–28, 2010

Visit to Heriot-Watt University, Edinburgh, Scotland, December 6–10, 2009

SciCADE 2009, Beijing, China, May 25–29, 2009

Ecole thématique sur les opérades, CIRM, Luminy, France, April 20–24, 2009

MaGIC 2009, Lillehammer, Norway, March 3–6, 2009

Visit to Institut de Recherche Mathématique Avancée, Université de Strasbourg, France, Jan–Feb, 2009

KoMiN 2008, Bergen, Norway, November 7–9, 2008

Méthodes numériques et algèbres de Hopf d’arbres, Université Blaise Pascal, Clermont-Ferrand, France, October 23–24, 2008

Foundations of Computational Mathematics, Hong Kong, China, June 16–26, 2008

Conférence Algèbre combinatoire et Arbres, Lyon, France, May 26–30, 2008

MaGIC 2008, Renon, Bolzano, Italy, February 18–21, 2008

KoMiN 2007, Oslo, Norway, November 2–4, 2007

Nasjonalt algebramøte, Oslo, Norway, November 1–2, 2007

The Nordic Conference in Topology, Trondheim, Norway, November 24–25, 2006

KoMiN 2006, Trondheim, Norway, November 3–5, 2006

Workshop on Triangulated Categories, Leeds, UK, August 13–19, 2006

Fifth NRW Topology Meeting, Bielefeld, Germany, April 28–29, 2006

25th Anniversary of MPIM, Bonn, Germany, April 1–5, 2006

Guest of Prof. Stefan Schwede, Mathematisches Institut, Rheinischen Friedrich-Wilhelms-Universität Bonn, Germany, March 31–May 5, 2006

Membership in Scientific Societies

Norwegian Mathematical Society, 2003–present

American Mathematical Society, 2004–present