

Renee Hoekzema

Curriculum vitae

✉ hoekzema@maths.ox.ac.uk
📧 reenehoekzema.nl

ACADEMIC CAREER

JUN 2020 –
POSTDOCTORAL RESEARCH ASSISTANT
University of Oxford, Mathematical Institute

OCT 2019 – JUN 2020
POSTDOCTORAL FELLOW
Max Planck Institute for Mathematics

2018 – 2019
POSTDOCTORAL RESEARCHER
University of Copenhagen
Department of Mathematical Sciences

2015 – 2018
DPHIL MATHEMATICS
University of Oxford, Trinity college

MAR/APR 2016 *Visiting Stanford University,
Department of Mathematics*

2012 – 2015
DPHIL EARTH SCIENCES
University of Oxford, St Cross college

2013-2014 *Visiting Utrecht University,
Department of Physical Geography*
MAR/APR 2014 *Visiting UC Berkeley, Department
of Integrative Biology*

2008 – 2012
MSc MATHEMATICAL SCIENCES (GPA: 4.0/4.0)
MSc THEORETICAL PHYSICS (GPA: 4.0/4.0)
Utrecht University

JAN-JUN 2009, *Student at ETH Zürich,*
2011-2012 *Department of Mathematics*

2005 – 2009
BSc MATHEMATICS (GPA: 4.0/4.0)
BSc PHYSICS AND ASTRONOMY (GPA: 4.0/4.0)
MINOR BIOGEOLOGY
Utrecht University

PUBLICATIONS & PREPRINTS

MATHEMATICS

- **Manifolds with odd Euler characteristic and higher orientability**, R. S. Hoekzema, *International Mathematical Research Notices*, 2018. 5 citations.
- **Cut and paste invariants of manifolds via algebraic K -theory**, R. Hoekzema, M. Merling, L.

Murray, C. Rovi, J. Semikina, *arXiv preprint 2001.00176*, 2020.

► **Orientability of high-dimensional manifolds with odd Euler characteristic**, R. S. Hoekzema. *arXiv preprint 2007.05451*, 2020.

PALAEONTOLOGY
► **Quantitative study of developmental biology confirms *Dickinsonia costata* as a metazoan**, R. S. Hoekzema, M. D. Brasier, F. S. Dunn and A. G. Liu, *Proceedings of the Royal Society B*, 2017. Widely reported in media, attention score in top 5% of research outputs scored by Altmetric. 20 citations.

AWARDS/SCHOLARSHIPS

- 2020 Oberwolfach Research Fellowship
- 2018 Schmidt Science Fellows Finalist
selected from over 200 applicants across the sciences, each of which nominated to apply as 1 of 5 from 46 world leading universities
- 2017 Trinity College Graduate scholarship
awarded for outstanding work in 2016/17
- 2014 EPSRC scholarship
- 2014 Fundatie van de Vrijvrouwe van Renswoude scholarship
- 2014 Hendrik Muller Fonds scholarship
- 2013 Pieter Langerhuizen Stipendium
awarded to a single researcher in the Netherlands yearly
- 2013 VSBfonds scholarship
- 2012 Prins Bernhard Cultuurfonds Fellowship
- 2012 Hendrik Muller Fonds scholarship
- 2012 Vreedefonds scholarship
- 2012 Genootschap Noorthey scholarship

OTHER WRITING

MATHEMATICS

- **Homotopy type of the space of nested manifolds**, R. S. Hoekzema. In preparation.
- **Algebraic Topology of Manifolds: Higher Orientability and Spaces of Nested Manifolds**, R. S. Hoekzema, 2018. DPhil thesis, 111 pages, supervised by Ulrike Tillmann.

PHYSICS

- **Generalized Causal Dynamical Triangulations in two dimensions**, R. S. Hoekzema, 2012. MSc thesis, 66 pages, supervised by Renate Loll, Tom Ilmanen (ETH Zürich), Gunther Cornelissen. 5 citations.
- **On the Topology of Lorentzian manifolds**, R. S. Hoekzema, 2011. Research essay
- **Primordial Gravitational Waves**, R. S. Hoekzema, 2009. BSc thesis, 51 pages

► **Abiotic formation hypothesis for the trace fossil *Paleodictyon*.**

R. S. Hoekzema, M. G. Kleinhans, W. J. McMahon.
In preparation.

► **Mathematical Studies of Morphology in the Palaeobiology of Early Life.** R. S. Hoekzema, 2015. DPhil thesis, 312 pages, supervised by Martin Brasier.

INVITED LECTURES

SEPT 2020 Centre for TDA, Oxford
MAY 2018 Topology seminar, Barcelona
MAR 2018 Utrecht Geometry Centre seminar
JAN 2018 SFB seminar on Higher Invariants, Regensburg
JAN 2018 Geometry/Topology seminar, Augsburg
DEC 2017 Topology seminar, Stanford
NOV 2017 Topology&Algebra seminar, Copenhagen
OCT 2017 Scottish Topology Seminar, Aberdeen
SEP 2016 OAC Manifolds meeting, Cambridge
APR 2016 Topology Progress Seminar, Stanford

CONTRIBUTED TALKS

2016 European Autumn School in Topology, Utrecht
2016 OAC Manifolds meeting, Cambridge
2016 Young Topologists' Meeting, Copenhagen
2016 MIT Talbot workshop on Equivariant stable homotopy theory and the Kervaire invariant, Heriman, Utah
2014 PalAss, Annual Meeting of the Palaeontological Association, Leeds
2014 Paleontology seminar, Berkeley
2014 North American Paleontological Convention, Gainesville, Florida
2014 Biomathematics group meeting, Oxford

CONFERENCES ATTENDED

2020 Women in Mathematical Physics, BIRS (virt.)
2020 Topologie workshop, Oberwolfach
2020 Introductory Workshop: Higher Categories and Categorification, MSRI Berkeley
2020 Connections for Women: Higher Categories and Categorification, MSRI Berkeley
2019 Automorphisms of Manifolds, Bonn
2019 Women in Topology, Bonn
2018 A Process Ontology for Biology, London
2017 Women in Topology, MSRI Berkeley
2017 K- and L-Theory and Geometric Group Theory, Oberwolfach
2017 Algebraic Topology of Manifolds, Oxford
2017 Young Topologists' Meeting, Stockholm
2017 Groups, Manifolds and K-Theory, Münster
2016 Topology of Manifolds, Lisbon
2016 IAS Women and Mathematics on Curves, Loops and Words in Geometry
2016 OAC Manifolds meeting, Aberdeen
2016 OAC Manifold meeting, Oxford
2015 Graduate Workshop on Topological Quantum Field Theory, Simons Center

2015 Clay Research Conference, Oxford
2015 Conference on Topology and Geometry, Bonn
2015 Young Topologists' Meeting, EPFL Lausanne
2015 ECSTATIC, Imperial College London
2014 Quantum Foundations & Quantum Gravity, Imperial College London
2014 Young Researchers in Mathematics, Warwick
2014 Reimaging the Foundations of Algebraic Topology, MSRI, Berkeley
2013 Dutch Society of Vertebrate Paleontology meeting, Maastricht
2013 Progressive Palaeontology, Leeds
2013 Life and The Planet spring school, Exeter
2013 Lyell Meeting: The Cambrian Explosion, The Geological Society, London
2013 Characterising Exoplanets: detection, formation, interiors, atmospheres and habitability, The Royal Society, London
2012 Quantum Gravity in Paris
2012 Dutch Society of Vertebrate Paleontology meeting, Maastricht
2012 Exploring Quantum Space-Time, Bad-Honnef
2011 Dutch Society of Vertebrate Paleontology meeting, Utrecht

TEACHING

2015 – 2018 COLLEGE LECTURER

Trinity college Oxford

Admissions of undergraduate applicants, advising undergraduate students and tutoring:

- *Linear Algebra II*
- *Topology*
- *Groups and Group Actions*
- *Group Theory*
- *Special Relativity*
- *Graph Theory*

2014 – 2016 TUTOR & TEACHING ASSISTANT

Oxford Mathematical Institute

- *Algebraic Topology*
- *Computational Algebraic Topology*
- *Homological Algebra*
- *Graph Theory*
- *Topology and Groups*

2012 – 2013 UNDERGRADUATE TUTOR

St Edmund Hall and St Peter's College

- *Mathematics for Materials and Earth Science*

2006 – 2012 TEACHING ASSISTANT

Utrecht University

- *Calculus*
- *Special Relativity*
- *Mechanics*
- *Mathematical Techniques for Physicists*
- *Physics lab course*
- *Multi-dimensional Analysis*
- *Introduction to logic, number theory and algebra*
- *Introduction to Topology*

OUTREACH & EQUALITY

- ▶ 2016 – 2018 **Equality Representative** for the Trinity College graduate body.
- ▶ 2017 **Invited lecture** for the joint meeting of the Mirzakhani society and Emmy Noether society for women studying mathematics at Oxford and Cambridge respectively.
- ▶ 2017 **Mathematics Ambassador** for Oxford Mathematics Department assisting outreach activity *It All Adds Up*, a Mathematics conference for girls in years 9-13.
- ▶ 2016 **Blog post** on popular mathematics blog “Picture this Maths”.
- ▶ 2005 – 2007 Organising **Astronomy camps** for children with the Dutch Youth Astronomy Association - organisation and supervision, giving lectures on scientific topics to children.

EXTRACURRICULAR

- ▶ 2015 – 2018 Graduate representative on **Research Committee** of the Oxford Mathematics Department.
- ▶ 2009 – 2010 Board member of **Co-determination Council for Physics Students** (SONS), organising weekly meetings for physics students to discuss education and facilities, member of the **Faculty Council** of the Science Faculty and **Department Council** of the Physics Department of Utrecht University.

SCIENTIFIC ADVISING

- ▶ 2017 – 2018 **Mathematical Advisor** for Resurgo Genetics, a research start-up studying topology of human DNA.
- ▶ 2016 – 2018 **Scientific Advisor** for the translation of *The Road to Reality*, Penrose (2004) into Dutch (Uitgeverij Merlin).
- ▶ 2015 – 2017 **Scientific Advisor** for the translation of *Lie groups, Physics and Geometry*, Gilmore (2008) into Dutch (Meromorf Press).