Florian Klimm

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Education

2014–2018 **DPhil (PhD)**, *University of Oxford*, Kellogg College.
Systems Approaches to Biomedical Sciences Centre for Doctoral Training
Mathematical Institute

2012–2014 **Master of Science (Physics)**, *Humboldt-Universität zu Berlin*.
Specialisation: Statistical Physics and Nonlinear Dynamics

2011–2012 **Fulbright Scholar**, *University of California, Santa Barbara*.
Participation in the Education Abroad Programm of the UCSB

2008–2012 **Bachelor of Science (Physics with minor in Mathematics)**, *Humboldt-Universität zu Berlin*.

2001–2008 **Abitur (high school diploma)**, *Humboldt-Gymnasium*, Eichwalde.
Advanced courses: Mathematics, Physics
Class Valedictorian

Scholarly work

(* indicates equal contribution by multiple authors)

Working Papers

[1] Sarah M Griffin and **FK**. Networks and Museum Collections.

[2] **FK**, Enrique M Toledo, Thomas Monfeuga, Fang Zhang, Charlotte M Deane, and Gesine Reinert. Functional module detection through integration of single-cell RNA sequencing data with protein-protein interaction networks. https://doi.org/10.1101/698647

[3] **FK*** and Benjamin F Maier*. A Network Science Summer Course for High School Students. https://github.com/floklimm/network-summer-school

Publications

[4] **FK**. Minimal connections and what they reveal. *Mathematics Today (accepted)*, 2019.

[5] Megan M Sperry, Qawi K Telesford, **FK**, and Danielle S Bassett. Rentian scaling for the measurement of optimal embedding of complex networks into physical space. *Journal of Complex Networks*, 5(2):199–218, 2016.

[6] Lia Papadopoulos, Pablo Blinder, Henrik Ronellenfitsch, **FK**, Eleni Katifori, David Kleinfeld, and Danielle S. Bassett. Comparing two classes of biological distribution systems using network analysis. *PLOS Computational Biology*, 14(9):1–31, 09 2018.

[7] Dane Taylor, **FK**, Heather A Harrington, Miroslav Kramár, Konstantin Mischaikow, Mason A Porter, and Peter J Mucha. Topological data analysis of contagion maps for examining spreading processes on networks. *Nature Communications*, 6, 2015.

[8] **FK**, Javier Borge-Holthoefer, Niels Wessel, Jürgen Kurths, and Gorka Zamora-López.

Individual node's contribution to the mesoscale of complex networks. *New Journal of Physics*, 16(12):125006, 2014.

[9] **FK**, Danielle S Bassett, Jean M Carlson, and Peter J Mucha. Resolving structural variability in network models and the brain. *PLoS Computational Biology*, 10(3):e1003491, 03 2014.

Peer-reviewed Conference Abstracts

[10] **FK**, Charlotte M Deane, Jonny Wray, and Mason A Porter. Reconfiguration of protein interaction networks during nematode development *The International Conference on Complex Networks and Their Applications 2017*

Doctoral Thesis

title Generalised networks for protein interaction analysis

supervisors Prof. Mason Porter, Prof. Charlotte Deane, and Dr. Jonny Wray

examiners Prof. Gesine Reinert and Dr. Mariano Beguerisse Díaz (transfer of status), Prof. Jotun Hein and Prof. Felix Reed-Tsochas (confirmation of status), Prof. Heather Harrington and Prof. James Wakefield (DPhil)

Master Thesis

title Characterisation of individual nodes in the mesoscale of complex networks

supervisors Prof. Jürgen Kurths and Dr. Gorka Zamora-López

Bachelor Thesis

title Charge transmission through single molecules – A density matrix approach

supervisors Prof. Beate Röder and Dr. Volkhard May

Study Group Papers

(authors in alphabetical order)

2016 **Root Segmentation Over Multiple Time Points**, *Multi-scale Biology Study Group University of Birmingham*, Henry Allen, Laura Cooper, Gustav Delius, Meurig Gallagher, Tom Johnson, **FK**, Ferdinando Randisi, Tom Shearer, and Clare Ziegler.

2015 **Abstract Modelling of Adverse Outcome Pathways**, *Quantitative Systems Pharmacology Study Group AstraZeneca*, Gerold Baier, Teresa Collins, Joanne Dunster, Ciarán Fisher, Enuo He, Andrzej Kierzek, John King, **FK**, Gary Mirams, Tom Snowden, and John Ward.

Honours

2019 **Best Poster Award**, *University of Cambridge*, Cambridge Network Day.

2018 **EPSRC Doctoral Prize**, *University of Oxford*.

2018 **Award for 'Contribution to the Life of the Department'**, *Mathematical Institute, University of Oxford*.

2018 **Public Engagement Prize**, *Doctoral Training Centre, University of Oxford*.

2017 **Best Talk Award**, *London Mathematical Society*, Graduate Student Meeting.

2017 **MCR Excellence Award**, *Kellogg College University of Oxford*.

2017 **Runner-Up 'Best Talk Award'**, *SIAM Student Chapter Conference Reading*.

2011 **Silver Medal**, *University Physics Competition*.

2008	**Humboldt-Prize**, *Humboldt-Gymnasium*, for 'outstanding GPA and his exceptional dedication to the high school'.

Research Experience

10/2019–present	**Research Associate**, *Imperial College*, Department of Mathematics, Dr. Nick Jones & Prof. Patrick Chinnery (Cambridge Mitochondrial Biology Unit).
	Single cell stochastics and statistics to study ageing
10/2018–9/2019	**Postdoctoral Researcher**, *University Oxford*, Department of Statistics, Prof. Charlotte Deane & Prof. Gesine Reinert.
	Liver-specific protein interaction networks
10/2018–9/2019	**Research Member of the Common Room**, *University Oxford*, Kellogg College.
6/2015–10/2018	**Doctoral Student**, *University Oxford*, Mathematical Institute, Prof. Mason Porter, Prof. Charlotte Deane, Dr. Jonny Wray & Prof. Philip Maini.
	Network generalisations for protein interaction analysis
	Research project in cooperation with pharmaceutical company *e-Therapeutics*
4/2015–5/2015	**Short Project**, *Roche Basel*, Prof. Chris Yau, Dr. Peter Humburg & Dr. Satu Nahkuri.
	High performance computing for eQTL analysis
11/2013–8/2014	**Academic Visitor**, *Potsdam Institute for Climate Impact Research*, Prof. Jürgen Kurths.
	Climate network analysis – Extreme precipitation during the Indian Summer Monsoon
8/2013–10/2013	**Academic Visitor**, *University of Oxford*, Mathematical Institute, Dr. Mason Porter.
	Filtrations, Persistence homology, and contagion dynamics on networks
10/2012–7/2013	**Research Assistant**, *Technical University Berlin*, Department of Software Engineering and Theoretical Computer Science, Dr. Timm Lochmann.
	Analyzation and modeling of single neuron train spikes in mice olfactory neurons
6/2012–9/2012	**Research Assistant**, *University of North Carolina at Chapel Hill*, Department of Mathematics, Prof. Peter J. Mucha.
	Network analysis of neurological networks received from diffusion spectrum imaging
1/2012–6/2012	**Research Internship**, *University of California, Santa Barbara*, Departments of Physics & Psychological and Brain Sciences, Dr. Danielle Bassett.
	Comparison of neurological data properties with various models
	Numerical calculation of topological fractal dimension and Rentian scaling
8/2010–9/2010	**Research Internship**, *Humboldt-Universität zu Berlin*, Department of Physics, Dr. Volkhard May.
	Understanding the principles of charge transmission through single molecules
	Analytical and numerical calculations of master equations

Teaching Experience

Christ Church, University of Oxford

Trinity 2019	**Stipendiary Lecturer (Tutor)**.
	Dynamics (Prelims), Calculus of Variation (Part A), Fourier Series and PDE's (Prelims), Multivariable Calculus (Part A)
Michaelmas 2018	**Stipendiary Lecturer (Tutor)**.
	Quantum Theory (Part A), Differential Equations I (Part A), and Probability (Part A)

Somerville College, University of Oxford

Hilary 2017 **Tutor for Undergraduates**.
Integral Transforms (Part A)

Michaelmas 2016 **Tutor for Undergraduates**.
Quantum Theory (Part A)

Mathematical Institute, University of Oxford

Hilary 2019 **Tutor & Assessor**.
Networks (Part C)

Hilary 2018 **Tutor**.
Networks (Part C)

Hilary 2017 **Teaching Assistant**.
Networks (Part C)

Michaelmas 2016 **Teaching Assistant**.
Graph Theory (Part B)

Michaelmas 2015 **Teaching Assistant**.
Numerical Solutions to Differential Equations II (Part B)

Doctoral Training Centre, University of Oxford

Michaelmas 2018 **Senior Demonstrator & Lecturer**.
Introduction to Programming

Michaelmas 2015 **Demonstrator**.
& 2018 HTML and Web-Design

Michaelmas 2015 **Demonstrator**.
Introduction into Matlab

Humboldt-Universität zu Berlin & Charité Berlin

2010/13/14 **Teaching Assistant**.
Supervisor at the Physical laboratory for students of Dentistry

Winter 2009 **Lecturer & Tutor**.
Introduction to university-level Mathematics for Physicists

Teaching Qualifications

2017 Associate Fellowship of the Higher Education Academy

2015 Teaching Assistant Training Mathematical Institute University of Oxford

Research Supervision

6/2019–9/2019 Yiqian Qian (Master Thesis in Statistical Science, University of Oxford, joint with Gesine Reinert): 'Ranking Musicians and Concert Venues'

7/2019–9/2019 Harrison Green (Research intern, joint with industrial collaborator ADARGA): 'Edge-prediction in large temporal networks'

Outreach

4/7/2019 **Speaker**, *Undergraduate Open Day* Mathematical Institute, University of Oxford.
Statistics & Probability for prospective students

3/2019–6/2019 **Presenter**, *Oxford Maths Festival* Department of Statistics, University of Oxford.
Presenting virtual reality experience to the general public

3/2019–6/2019	**Virtual Reality Designer**, *Dimensions: the Mathematics of Symmetry and Patterns* Ashmolean Museum of Art and Archaeology. Creating a virtual reality experience for a general public audience (22k visitors). The exhibition was Highly Commended in Oxford's 'The Vice-Chancellor's Public Engagement with Research Awards 2019'.
29/4/2018	**Speaker**, *Oxford Maths Festival* Mathematical Institute, University of Oxford. *Networks: Describing an Interconnected World* for general public
15/11/2017	**Speaker**, *Graduate Open Day* Mathematical Institute, University of Oxford. *Community Detection in Networks* for prospective students
28/9/2017	**Speaker**, *Tag der Wissenschaft & Wirtschaft* Humboldt-Gymnasium Eichwalde. *Biomathematics and Networks* for high school students
Summer 2016	**Co-Organiser & Lecturer**, *Schülerakademie*. Summer school on *Networks and Complex Systems* for high school students, 16 days
2015	**Tutor**, Masterclass. *Networks* for middle school students, two 45 min sessions
2015	**Translation**, Network Literacy: Essential Concepts and Ideas *from English into German*.

Voluntary Work & Services

9/12/2019	**Organiser**, *Complexity OXford Imperial College (COXIC)*.
2018–2019	**Postdoctoral Representative**, *Departmental Committee*, Department of Statistics, University of Oxford.
2018–2019	**Organiser**, *Networks Seminar*, Mathematical Institute, University of Oxford.
2018	**Co-organiser**, *SIAM-IMA Student Chapter Conference*, University of Oxford.
2017–2018	**Treasurer**, *SIAM Student Chapter*, University of Oxford.
2017–2018	**Member**, *Consultative Committee for Graduate Students*, Mathematical Institute Oxford.
2016–2017	**President**, *Middle Common Room*, Kellogg College, (in this position member of various college committees).
2015–2016	**Treasurer**, *Middle Common Room*, Kellogg College.
2012–2013	**Mentor**, Stanford University in Berlin.
2009–2011	**Member**, Kommission für Lehre und Studium *(Committee of Studies)*, Institut für Physik der Humboldt-Universität zu Berlin.
2009–2011	**Mentor**, Institut für Physik der Humboldt-Universität zu Berlin.
2009–2010	**Co-organiser**, Zusammenkunft aller Physikfachschaften *(Federal Union of all Physics Student Representatives)*, Berlin/Frankfurt.
Summers 2007–2009	**Lifeguard**, Spa Town Karlshagen, Baltic Sea.
2007–2008	**Editor of the Yearbook**, *Humboldt-Gymnasium*, Eichwalde.

Peer Review

Journals	*Physical Review E*, *Journal of Complex Networks*, *PLOS ONE*
Conferences	International Society for Computational Biology 2018
Other	UK Fulbright Commission

Scholarships

2018	**Grad Student Travel Grant**, *Joint Mathematics Meetings*.
2014–2018	**Full Studentship for EU Students**, *EPSRC*.
2013	**Leonardo da Vinci**, *European Commission*.
2012	**PROMOS**, *German Academic Exchange Service (DAAD)*.
2011–2012	**German-American Fulbright Program**.
2011–2012	**Full Fee Waiver**, *University of California at Santa Barbara*.
2008–2010	**Studienstiftung des Deutschen Volkes**, *German National Academic Foundation*.

Membership in Professional Organisations

2017–present	Royal Statistical Society
2016–present	Society for Industrial and Applied Mathematics
2014–present	Complex Systems Society
2008–present	Deutsche Physikalische Gesellschaft (DPG, German Physical Society)

Talks

(**bold** indicates invited talks)

24/02/2015	Algebraic Topology Workshop, University Oxford
6/2/2015	TOPONETS15 NetSci, Zaragoza
21/9/2015	14th Mathematics of Networks Meeting, Oxford
23/3/2016	Emphasis Workshop 'Generalized Network Structures & Dynamics', MBI Columbus, Ohio
21/9/2016	Conference on Complex Systems, Amsterdam
17/5/2017	SIAM Student Conference, Oxford
13/6/2017	Cambridge Networks Day ('flash talk'& poster)
16/6/2017	SIAM Student Conference, Reading
6/9/2017	Mediterranean School of Complex Networks
13/9/2017	2nd Symposium on Spatial Networks, Oriel College Oxford
10/11/2017	London Mathematical Society Graduate Student Meeting (*Best Talk Award*)
29/11/2017	Complex Networks, Lyon
10/1/2018	Joint Mathematics Meeting, San Diego
17/4/2018	COXIC, Imperial College London
25/4/2018	Kellogg College Seminar, Oxford
12/6/2018	NetSciEd Satellite, Paris
14/6/2018	NetSci, Paris
7/12/2018	The Connected Past, University of Oxford
29/8/2019	Cambridge Networks Day ('flash talk', poster & *Best Poster Award*)
3/9/2019	Single Cell Biology Consortium, University of Oxford
8/10/2019	**Centre for Complexity Science**, Imperial College London
30/3/2020	**Networks approaches for Healthcare applications**, University of Exeter

Languages

German	Native speaker	
English	Fluent	*UniCERT IV, TOEFL iBT with 107 points (30/28/24/25)*
French	Basic	*4 years of high school education, participation in student exchange*
Latin	Intermediate	*3 years of high school education*