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Academic Career & Employment

Present *Professor of Applied Mathematics (Chair)*, University of Leeds (UK)
2009-2021 *Lecturer then Associate Professor of Applied Mathematics*, University of Leeds (UK)
2007-2009 *Advanced Research Fellow (Mathematics & Complexity)*, University of Warwick (UK)
2005-2007 *Humboldt Research Fellow (Theoretical Physics)*, University LMU of Munich (Germany)
2002-2005 *Postdoc. Research Fellow (Theoretical Physics)*, Boston University & Virginia Tech (USA)
1998-2002 *PhD in Theoretical Physics* (high distinction), Swiss Federal Institute of Technology, EPFL
1993-1998 *MSc in Physics* (Dipl. Phys. EPF = MSc equivalent), Swiss Federal Institute of Technology Lausanne, EPFL

Summary of Scientific Results (03/2022) (see <http://www1.maths.leeds.ac.uk/~amtmmo/Research.html>)

- **67 peer-reviewed papers** (29 as first author, 11 single-authored) and **H-index 29**
- **4762 citations** and 2555 since 2017; average citations/paper > 71; 11 publications with >100 citations, 22 with > 50 citations and 51 with ≥ 10 citations.
- 1 publication in Nature; 8 in Phys. Rev. Lett.; 1 in Phys. Rev. X; 25 in Phys. Rev. E & B; 1 in ISME Journal, 1 in Phys. Life. Rev., 3 in J. Phys. A; 4 in J. Theor. Biol.; 5 in EPL; 5 in JSTAT; 2 in J. Stat. Phys.; 3 in J. Roy. Soc. Interface, 1 in Eur. Phys. J. B; 1 in Chaos, Solitons & Fractals; 1 in J. Phys.: Cond. Matter; 1 in Games; 3 in Banach Center Publ. + 1 in Springer Proceedings.
- International conferences & seminars: given 65 invited talks and 40 contributions in international conferences or graduate schools, including 15 as invited speaker. Organization of 13 schools/workshops
- Research featured in international media through press and radio coverage (see below)

Awards and Research Grants (selection, bold: large external grants + individual fellowships)

2021-24 PI of **EPSRC-NSF grant** EP/V014439/1 (*Eco-Evolutionary Dynamics of Fluctuating Populations*)
2021-25 EPSRC PhD studentship for M. Asker (EP/T517860/1, *Lead Supervisor*)
2019 Grants of the EPSRC Network Plus in Physics Far From Equilibrium & Leeds School of Maths
2018-21 **China Scholarship Council Grant** No. 201803170212 (*X. Li's PhD, Lead Supervisor*)
2017 Grants from London Mathematical Society (Scheme 4) & Leeds School of Maths
2016-20 EPSRC PhD studentship for R. West (EP/N509681/1, *Lead Supervisor, completed*)
2016 Humboldt Foundation grant held at LMU Munich (3.3-GBR/1119205 STP),
2015 Grants from London Mathematical Society (Scheme 4) & Leeds School of Maths
2015 Travel grant of the APS (APS Biological Physics & Moore Foundation)
2013-17 **EPSRC CASE award** EP/L50550X/1 by KTN for industrial mathematics
2010-14 EPSRC PhD studentship for B. Szczesny (EP/P505593/1, *Lead Supervisor, completed*)
2008-09 **Advanced Research Fellowship** of the Swiss National Science Foundation (PA0022-119487)
2005-07 **Research Fellowship** of the German Humboldt Foundation (IV-SCZ/1119205 STP)
2002-05 **Postdoctoral Research Fellowship** of the Swiss National Science Foundation (81EL-068473)

Memberships, Affiliations & Scholarship

2021 - present Member of the UKRI Future Leaders Fellowships Peer Review College
2020 - present Member of the Society for Mathematical Biology
6/2013 + 2/2018 Member of the U.K. EPSRC Mathematics prioritisation panel
8/2014 - 12/2014 Visiting Fellow at the Isaac Newton Institute for Mathematical Sciences
2013 - present Coordinator of the School of Mathematics' Undegraduate Summer Bursary Scheme
2013 - present Fellow of The Higher Education Academy (FHEA)
2011 - present Member of the international Complex Systems Society
2010 - present Full member of the U.K. Engineering and Physical Sciences Research Council College
2005 - present Member of the Humboldt Foundation's Network of Fellows
2004 - present Member of the American Physical Society & European Physical Society
2002 - present Referee for 37 journals + 8 funding bodies (incl. EPSRC, BBSRC & Leverhulme Trust)

Student supervision & Examining Experience

- 2010 - present Supervision of 10 PhD (7 completed) + 9 MSc + 28 BSc students in Maths at Leeds
2005 - 2009 Co-supervision of 2 PhD + 2 MSc students (Theoretical Physics, Munich + Maths, Warwick)
2010 - present 14 PhD examinations (Leeds, Manchester, Warwick, Bath, Leicester, Munich, Jerusalem.)

Teaching: Taught 11 maths (levels 0, 1, 3 and 5M) modules at Leeds. Since 2014: Design, management & delivery of 3rd- and 4th-year modules "Evolutionary Modelling" & "Advanced Evolutionary Modelling".

Fields of Expertise & Interest:

Non-equilibrium Statistical Mechanics; Mathematical Biology & Ecology; Stochastic Processes; Individual-based models; Evolutionary and Population Dynamics in the Life and Social Sciences; Complex Systems.

Presentations: 68 invited seminars and 43 presentations in conferences. Highlights of some talks:

- 26-30/4/21 (MPDDEE21): *Evolution of a Fluctuating Population in a Changing Environment*
- 30/8-3/9/20 (European Conference on Mathematical and Theoretical Biology): *Population Dynamics in a Changing Environment: Random vs. Periodic Switching*
- 26-29/3/18 (British Applied Maths Colloquium 2018, St Andrews): *Eco-Evolutionary Dynamics in a Randomly Switching Environment: Competition & Cooperation*
- 18-22/7/16 (STATPHYS26 in Lyon): *Nonlinear q-Voter Models with Zealotry*
- 5/3/15 (2015 American Physical Society March Meeting in San Antonio, USA): *Spiraling patterns in evolutionary models inspired by bacterial games with cyclic dominance* (invited speaker).
- 10-11/5/14: ("Novel Applications of Statistical Mechanics: A Celebration of Sidney Redner's Contribution", Boston, USA): *Zealotry, persuasion and polarization in voter models* (invited speaker).
- 29/11/13 (CS&F Conference on "Collective Behavior and Evolutionary Games" in Amsterdam, NL): *Prisoner's dilemma in the presence of facilitators and under extrinsic noise* (invited speaker).

Workshops & Schools: Organization + management of workshops and postgraduate school (selection)

- 20-23/9/21 (6-hour PG course at Padua (IT), lecturer): *Topics in Evolutionary Dynamics*
- 2-5/7/19 in Leeds: *Fluctuations, tipping points & emergence in eco-evolutionary dynamics*
- 25/7/17 (CoSyDy workshop at Leeds): *Network Dynamics and Structure*
- 12/5/16 (CoSyDy workshop at Leeds): *Dynamics of Agent-Based Models*
- 5/6/13 (CoSyDy workshop at Leeds): *Complexity in Economics & Social Dynamics*
- 25/5/12 (PG School, Brussels, BE): *Rock-Paper-Scissors & Cyclic Bacterial Games* (Lecturer)
- 2/3/12 (CoSyDy workshop at Leeds): *Evolution & Diversity in Complex Systems*
- 15/11/10 (CoSyDy workshop at Warwick): *Movement in Models of Mathematical Biology*
- 2/10-10/19: Founder & Chairman of the UK *Complex Systems Dynamics (CoSyDy)* network
- 23/9/09 (ECCS'09 Satellite at Warwick): *Statistical Mechanics of Molecular & Cell Biology*
- 11-13/12/07 (International PG School at Warwick, UK): *Mathematics of Evolutionary Dynamics*

Media Coverage (selection): My research has received the following international media coverage

- *Fluctuating environments can help cooperating bacteria* in Phys.org and AlphaGalileo
- University of Leeds press release and LMU press release: *Fluctuating conditions favor cooperation*
- Nature **448**, 1046-1049 (2007) selected by Faculty of 1000 Biology and recommended for *Technical Advance* and *New Finding*
- *Rock, paper, toxins* in Science News magazine
- In Spanish: *Rock, paper or scissors & the biodiversity via coevolution*
- *Biodiversity in Spatial Rock-Paper-Scissors Games*, Mathematica's Wolfram Demonstration Project
- *Stochastic Rock-Paper-Scissors Population Dynamics*, Mathematica's Wolfram Demonstration Project
- *Zealots put the spin into voting* in Physicsworld
- In German: *Mobility hinders biodiversity* in "Pressrelation.de";
- In Italian: *Particles and voting behaviors*; 20-minute interview on "Radio24. Il Sole 24 Ore"
- In Italian: *Are zealots like electronic spins?* in "Le Scienze";
http://lescienze.espresso.repubblica.it/articolo/Gli_attivisti_elettorali_come_gli_spin_degli_elettroni/1287352

Three Representative Publications (accumulating > 1000 citations)

1. *Mobility promotes and jeopardizes biodiversity in rock-paper-scissors games*, Nature **448**, 1046 (2007) DOI:10.1038/nature06095. *In the top 5% of all articles of similar age tracked by Altmetric in all journals.*
2. *Does a single zealot affect an infinite group of voters?* Phys. Rev. Lett. **91**, 28701 (2003); DOI:10.1103/PhysRevLett.91.028701
3. *Evolution of a fluctuating population in a randomly switching environment* Phys. Rev. Lett **119**, 158301 (2017); DOI:10.1103/PhysRevLett.119.158301