

Dr Eva-Maria Graefe

University Appointments

- SINCE SEP 2018 Reader in Mathematical Physics, Department of Mathematics, Imperial College London
- NOV 2016 – AUG 2018 Senior Lecturer in Mathematical Physics, Department of Mathematics, Imperial College London (Maternity leave December 2016 – March 2017)
- SINCE APR 2015 Royal Society University Research Fellow (“*Development of semiclassical methods for non-Hermitian quantum systems*”), Department of Mathematics, Imperial College London
- AUG 2013 – MAR 2015 Junior Research Fellow in Mathematics (independent research and teaching), Department of Mathematics, Imperial College London (Maternity leave September – December 2013)
- AUG 2010 – JUL 2013 Imperial College Junior Research Fellow (“*Towards a semiclassical framework for non-Hermitian quantum theories*”), Department of Mathematics, Imperial College London
- APR 2009 – JUL 2010 Research and Teaching Assistant (EPSRC grant: “*Semiclassical asymptotics for open chaotic systems*”; and undergraduate teaching), Department of Mathematics, University of Bristol

Research Expertise

Mathematical and theoretical physics, with a focus on:

- Quantum dynamics
- Quantum-classical correspondence and semiclassical methods
- Quantum chaos and Random Matrices
- Non-Hermitian and PT-symmetric quantum theories
- Cold atoms and Bose-Einstein condensates

Qualifications

- OCT 2005 – MAY 2009 PhD in Theoretical Physics (with distinction), *Quantum-classical correspondence for a Bose-Hubbard dimer and its non-Hermitian generalisation*, TU Kaiserslautern, Germany
- OCT 2001 – AUG 2005 Diplom in Physics, *Selected linear and nonlinear Landau-Zener scenarios*, TU Kaiserslautern, Germany

Fellowships, Prizes, and Grants

- SINCE NOV 2020 Royal Society University Research Fellowship extension
- JUN 2019 Anne Bennett Prize of the London Mathematical Society
- JUN 2018 Imperial College President’s Award for Outstanding Early Career Researcher
- SINCE FEB 2018 ERC Starting Grant
- SINCE DEC 2017 Royal Society Research Fellow Enhancement Grant
- APR 2015 – OCT 2020 Royal Society University Research Fellowship
- SEP 2014 – SEP 2017 LMS joint research groups grant, *New mathematical methods for open quantum systems*, with Dr S Gnutzmann (University of Nottingham), and Dr R Schubert (University of Bristol)
- SEP 2014 – AUG 2015 L’Oréal UNESCO for Women in Science Fellowship 2014
- AUG 2010 – JUL 2013 Imperial College Junior Research Fellowship
- JUN 2010 Award of the “Freundeskreis der TU Kaiserslautern” 2010 for an outstanding PhD thesis

Student and postdoc supervision

SINCE NOV 2018 Supervision of three postdoctoral researchers

SINCE 2012 Eight PhD projects (four successfully completed, four ongoing). Topics include: *Quantum and semiclassical aspects of Lindblad dynamics*, *PT-symmetric quantum chaos and random matrices*, *quantum transition rate theory*, *Phase space methods for non-Hermitian quantum systems*, Department of Mathematics, Imperial College

SINCE 2011 Thirteen MSc, seven MSci projects and two UROP summer project. Topics include: *Quantum effects in hydrogen embrittlement*, *PT-symmetric quantum chaos*, *Atom-molecule conversion in Bose-Einstein condensates*, *Classical limit of open quantum systems*, *Signatures of coalescing eigenvalues*, *Random matrix theory*, Department of Mathematics, Imperial College

Teaching (* including course development)

2011 – 2015 AND 2017 – 2021 Third and fourth year and MSc lecture course: *Quantum Mechanics**, Department of Mathematics, Imperial College

SPRING 2011 MSc in Applied Mathematics and Mathematical Physics, lecture course: *Introduction to Quantum Dynamics**, Department of Mathematics, Imperial College

AUTUMN 2010 Undergraduate lecture course: *Random Matrix Theory*, Department of Mathematics, University of Bristol

Outreach

- Outreach activities: Workshops at Inspiring Women in Mathematics (October 2016) and year 10 summer school at Imperial (July 2017), interview on the Watson forum (2016), Institute of Mathematics and its Applications careers profile (2016), speaker for several high school events (since 2015), participation in SET for Britain poster exhibition in the House of Commons (2013)
- Author of News and Views article in Nature Photonics on PT-symmetry in quantum experiments (2019)
- Author of Viewpoint in Physics on quantum chaos (2013)

Professional Services and Administration

- Co-organiser of a minisymposium on *quantum chaos and semiclassics*, Dynamics Days Europe 2018, University of Loughborough, UK
- Co-organiser of an international workshop on *non-Hermitian quantum mechanics and symplectic geometry*, American Institute of Mathematics, San Jose, California, US
- Co-organiser of the 17th international workshop on *PT-symmetric quantum mechanics*, 642nd WE-Heraeus Seminar, Bad Honnef, Germany 2017
- Co-organiser of nine one-day workshops of the LMS joint research group *New Mathematical Methods for Open Quantum Systems*, at Bristol, Nottingham, and Imperial
- Member of the Advisory Panel of Journal of Physics A
- Regular referee for (amongst others) Journal of Physics A, Physical Review Letters, Physical Review A, Physical Review X, Scientific Reports
- Departmental roles: Director of Research since October 2020, Member of Research Committee since July 2018, LMS Departmental Representative since April 2018, Departmental Postdoc Champion (representing and advising postdocs in the department) 2017 – 2018, (Co)organisation of Mathematical Physics Seminar series since 2012

Membership of Professional Bodies

Institute of Physics, London Mathematical Society, German Physical Society

Last updated June 2021