

Prof. Dr. Ralf Metzler

Personal Details

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ResearcherID: J-9088-2013, ORCID: 0000-0002-6013-7020

University Education with Degree

Study of physics (1989-1994), University of Ulm, diploma (MSc equivalent)

Scientific Degrees

Doctorate of Science (PhD equivalent), University of Ulm, 1996, summa cum laude

Thesis supervisor: Prof Dr T F Nonnenmacher

Professional Career since Final Degree

1997 Postdoc, Ulm University; Research officer, University of Erlangen-Nuremberg

1998-2000 Postdoc, Tel Aviv University

2000 Visiting scientist, University of Illinois, Urbana-Champaign

2000-2002 Postdoc, Massachusetts Institute of Technology (MIT), Cambridge, MA

2002-2006 Assistant professor, Nordic Institute for Theoretical Physics (NORDITA), Copenhagen

2006-2007 Associate professor and Canada Research Chair, University of Ottawa

2007-2011 Professor (W2, Extraordinarius) for Complex BioMaterials, TU Munich

2010-2015 Finland Distinguished Professor, Academy of Finland, Tampere University of Technology

Since 2011 Professor (W3), Chair for Theoretical Physics, University of Potsdam

Services

Since 2002 President/member of various faculty hiring, habilitation, PhD committees

2010-2012 NORDITA Programme committee member, NORDITA, Stockholm, Sweden

Since 2012 Affiliated researcher, Minerva Center for Movement Ecology, Hebrew University, Jerusalem

2013-2016 Research Council Member, Hugo Steinhaus Center, Wroclaw, Poland

Since 2014 Faculty Council Member (2022- deputy chairman), Faculty of Sciences, U Potsdam

2016-2018 Director, Institute for Physics & Astronomy, University of Potsdam (2018-2019, Deputy)
Since 2020 Speaker, Research Focus Data-centric Sciences, University of Potsdam
Since 2021 Co-organiser, Anomalous Diffusion (AnDi) online community challenge in data assimilation of stochastic time series

Funding Received (cumulative)

German Science Foundation (DFG): €1,450,000

German Ministry of Education & Research (BMBF): €730,000

Academy of Finland & matching funds, Tampere University of Technology: €910,000 NORDITA: €40,000

Government of Canada: €650,000

Other: PhD grants €200,000; Workshop grants €100,000; Computing grants: €90,000 Overall: €4.2 M

Awards & Prizes

Amos de Shalit named fellowship, Minerva foundation (1998)

Feodor Lynen fellowship, Alexander von Humboldt foundation (1998)

Emmy Noether fellowship, Deutsche Forschungsgemeinschaft (2000)

Finland Distinguished Professorship, Academy of Finland (2010)

OCCAM Visiting Fellow, Mathematical Institute, University of Oxford (2013)

SigmaPhi Prize 2017 for outstanding achievements in Statistical Physics (2017)

Invited EPS lecturer (2018) Humboldt Polish Honorary Research Scholarship, Foundation for Polish Science (2018-2021)

Higgs Associate, Higgs Centre for Theoretical Physics, University of Edinburgh (2020-)

Elsevier lecturer, XXVII Congresso Nazionale della Società Chimica Italiana (2021)

APCTP Distinguished Fellow (Senior Advisory Group Scientist), Asia Pacific Centre for Theoretical Physics, Pohang, Korea (2022-)

Distinguished Visiting Professor, Department of Chemistry, Indian Institute of Technology Bombay, Mumbai, India (2023-2024)

Heilbronn distinguished visiting fellowship, Heilbronn Institute for Mathematical Research, Bristol, with invited Heilbronn visiting talks at King's College & University of Bristol (2023)

Editorial Work, Refereeing, etc.

Executive Editorial Board member, Journal of Physics A

Specialty Chief Editor, Biophysics, Frontiers in Physics

Associate Editor, Journal of Biological Physics

Editor, Fractional Calculus–Applied Analysis

Reviewer for granting agencies: NSF (USA), Dept of Energy (USA), DFG (Germany), Humboldt Foundation (Germany), ISF (Israel), ANR (France), IUF (France), Academy of Finland, NSERC (Canada), Government of Canada (CRC), MIUR (Italy), FWO (Belgium), FWF (Austria), Marsden (New Zealand), BBSRC (UK), Villum Fonden (Denmark), Det Frie Forskningsrad/Natur og Univers (FNU, Denmark), European Research Council (ERC), FONDECYT/CONICYT (Chile), US-Israel BSF, Lundbeckfonden (Denmark) . . .

Funding board membership: Novo Nordisk Foundation (Hellerup, Denmark)

Supervision of Students & Host to Scientists

Postdocs: 21 (including Karl Scheel Prize winner Dr Aljaz Godec)

PhD students (main supervisor & co-tutelle): 14 (including Marthe Vogt Award winner Dr Vittoria Sposini) PhD students (co-supervisor & host for periods from 1/2 to 1 1/2 years): 13

MSc students: 13

Host of senior colleagues with fellowships from: 5 Alexander von Humboldt (including Bessel Prize winner Prof Denis Grebenkov), 3 DAAD, 2 DFG.

Key Publications (selected, past 10 years)

H. Seckler and **R. Metzler** (2022). Bayesian deep learning for error estimation in the analysis of anomalous diffusion. *Nature Comm.* 13:6717.

O. Vilk, E. Aghion, T. Avgar, C. Beta, O. Nagel, A. Sabri, R. Sarfati, D. K. Schwartz, M. Weiss, D. Krapf, R. Nathan, **R. Metzler**, and M. Assaf (2022). Unravelling the origins of anomalous diffusion: from molecules to migrating storks. *Phys. Rev. Res.* 4:033055.

G. Muñoz-Gil, G. Volpe, M. A. Garcia-March, E. Aghion, A. Argun, C. B. Hong, T. Bland, S. Bo, J. A. Conejero, N. Firbas, Ò. Garibo i Orts, A. Gentili, Z. Huang, J.-H. Jeon, H. Kabbech, Y. Kim, P. Kowalek, D. Krapf, H. Loch-Olszewska, M. A. Lomholt, J.-B. Masson, P. G. Meyer, S. Park, B. Requena, I. Smal, T. Song, J. Szwabiński, S. Thapa, H. Verdier, G. Volpe, A. Widera, M. Lewenstein, **R. Metzler**, and C. Manzo (2021). Objective comparison of methods to decode anomalous diffusion. *Nature Comm.* 12:6253.

E. Yamamoto, T. Akimoto, A. Mitsutake, and **R. Metzler** (2021). Universal relation between instantaneous diffusivity and radius of gyration of proteins in aqueous solution. *Phys. Rev. Lett.* 126:128101 (Editor's suggestion).

D. Krapf, N. Lukat, E. Marinari, **R. Metzler**, G. Oshanin, C. Selhuber-Unkel, A. Squarcini, L. Stadler, M. Weiss, and X. Xu (2019). Spectral Content of a Single Non-Brownian Trajectory. *Phys. Rev. X* 9:011019.

A. V. Chechkin, F. Seno, **R. Metzler**, and I. M. Sokolov (2017). Brownian yet non-Gaussian diffusion: from superstatistics to subordination of diffusing diffusivities. *Phys. Rev. X* 7:021002.

A. Godec and **R. Metzler** (2016). Universal proximity effect in target search kinetics in the few encounter limit. *Phys. Rev. X* 6:041037.

J.-H. Jeon, M. Javanainen, H. Martinez-Seara, **R. Metzler**, and I. Vattulainen (2016). Protein crowding in lipid bilayers gives rise to non-Gaussian anomalous lateral diffusion of phospholipids and proteins. *Phys. Rev. X* 6:021006.

J. H. P. Schulz, E. Barkai, and **R. Metzler** (2014). Aging renewal theory and application to random walks. *Phys. Rev. X* 4:011028.

V. V. Palyulin, A. V. Checkin, and **R. Metzler** (2014). Lévy flights do not always optimize random blind search for sparse targets. Proc. Natl. Acad. Sci. USA 111:2931.