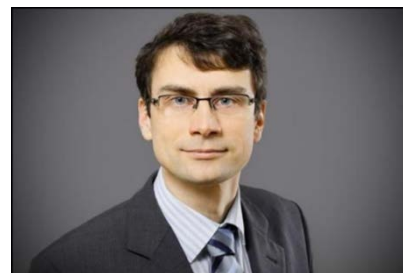


PD Dr. rer. nat. habil. Benjamin M. Friedrich

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Education

2017	<u>Habilitation in Theoretical Physics</u> at TU Dresden - Title of thesis: 'Nonlinear dynamics and fluctuations in biological systems'
02/09	<u>PhD in Theoretical Physics</u> at MPI PKS Dresden (supervisor Frank Jülicher) - Title of PhD thesis: 'Chemotaxis of sperm cells' - Thesis submission: 20.10.08, PhD defense: 17.02.09 (<i>summa cum laude</i>)
10/99 – 03/04	<u>Diploma course Mathematics</u> at Universität Leipzig (<i>Final grade 1.0</i>) - Title of Diploma thesis: 'Periods and Algebraic deRham Cohomology'
10/01 – 07/02	Study at University of Cambridge, UK - Master degree: Certificate of Advanced Study in Mathematics (<i>distinction</i>)
08/91 – 07/98	Abitur (A-levels) in Rostock (<i>Final grade 1.0</i>)

Professional experience

since 04/16	<u>Independent Research Group Leader</u> 'Biological Algorithms Group' in the Biological Systems Path of the Cluster of Excellence: Center for Advancing Electronics Dresden, TU Dresden (permanent since 12/2018)
10/11 – 03/2016	<u>Independent Research Fellow</u> at the Max Planck Institute for the Physics of Complex Systems, Dresden Mechanical and chemical regulation in complex biological systems
09/09 – 08/11	<u>Post-doc with Samuel Safran</u> at the Weizmann Institute of Science, Rehovot, Israel Self-organized pattern formation of the cytoskeleton
08/05 – 08/09	<u>PhD student and post-doc with Frank Jülicher</u> at the Max Planck Institute for the Physics of Complex Systems, Dresden
09/07	Guest stay in the lab of U. Benjamin Kaupp

	at the Institut für Zelluläre Signalverarbeitung, Forschungszentrum Jülich Data analysis for sperm chemotaxis experiments
01/05 – 07/05	Guest scientist with Angela Stevens at the Max Planck Institute for Mathematics in the Sciences, Leipzig Work in mathematical biology (elasticity of prokaryotic flagella)
09/04 – 10/04	Visiting Associate with the Boston Consulting Group GmbH
04/04 – 08/04	Teaching assistant in Mathematics at Universität Leipzig, Germany
10/99 – 03/04	Diploma course Mathematics at Universität Leipzig (<i>Final grade 1.0</i>)
10/01 – 07/02	Study at University of Cambridge, UK Master's degree: Certificate of Advanced Study in Mathematics (<i>distinction</i>)

Awards & Scholarships

2019	Dresden Excellence Award for best habilitation thesis
2018	Privatdozent at Faculty of Physics, TU Dresden
2017	TUD Young Investigator of TU Dresden
2011-2014	Distinguished PKS fellow at MPI PKS, Dresden
2009	Otto-Hahn medal of the Max-Planck Society
1998	Bronze medal prize at the International Mathematics Olympiad, Taiwan
1999-2004	Scholarship German National Academic Foundation

Memberships

2014 - 2020	DFG priority program SPP 1726 "Microswimmers"
since 2016	Center for Systems Biology Dresden: Affiliate Member
since 2018	Faculty of Physics, TU Dresden: Privatdozent
since 2018	DIGS-BB graduate school "Understanding Life": principal investigator
since 2018	Cluster of Excellence "Physics of Life", TU Dresden: principal investigator

Invited talks at international conferences: 17

PUBLICATION LIST

Publications in peer-reviewed journals

Ten most important publications are highlighted (→).

1. **B.M. Friedrich**: A mesoscopic model for helical bacterial flagella, *J. Math. Biol.* **53**, p. 162-178, 2006. Citations 9
- 2. **B.M. Friedrich**, Frank Jülicher: Chemotaxis of sperm cells, *Proc. Natl. Acad. Sci. U.S.A.* **104**(33), p. 13256-13261, 2007. Highlighted in Nature Physics, citations 161
3. **B.M. Friedrich**: Search along persistent random walks, *Phys. Biol.* **5**, p. 026007(6), 2008. Citations 23
4. **B.M. Friedrich**, Frank Jülicher: The stochastic dance of circling sperm cells: Sperm chemotaxis in the plane, *New J. Phys.* **10**, p. 123025(19), 2008. Citations 79
5. **B.M. Friedrich**, Frank Jülicher: Steering chiral swimmers along noisy helical paths, *Phys. Rev. Lett.* **103**, 068102, 2009. Citations 71
- 6. **B.M. Friedrich**, I.H. Riedel-Kruse, J. Howard, F. Jülicher: High-precision tracking of sperm swimming fine structure provides strong test of resistive force theory, *J. exp. Biol.* **213**, p. 1226-1234, 2010. Highlighted in 'Inside JEB', citations 188
7. **B.M. Friedrich**, S. A. Safran: Nematic order by elastic interactions and cellular rigidity sensing, *Europ. Phys. Lett.* **93**, p. 28007(6), 2011. Citations 13
8. **B.M. Friedrich**, A. Buxboim, D. Discher, S. A. Safran: Striated acto-myosin fibers can reorganize and register in response to elastic interactions with the matrix, *Biophys. J.* **100**, 2011. Citations 44
9. E. Fischer-Friedrich, **B. M. Friedrich**, N. S. Gov: FtsZ rings and helices: Physical mechanisms for the dynamic alignment of biopolymers in rod-shaped bacteria, *Physical Biology* **9**, 1, 2012. Citations 15
10. L. Armon, S. R. Caplan, M. Eisenbach, **B. M. Friedrich**: Testing human sperm chemotaxis: How to detect biased motion in population assays, *PLoS ONE* **7**(3), 2012. Citations 11
11. **B. M. Friedrich**, S. A. Safran: How cells feel their substrate: Spontaneous symmetry breaking of active surface stresses, *Soft Matter* **8**(11), 2012. Citations 22
12. L. Alvarez, L. Dai, **B.M. Friedrich**, I. Gregor, R. Pascal, N. Kotzur and U. B. Kaupp: The rate of change in Ca^{2+} concentration controls sperm chemotaxis, *J. Cell Biol.* **196**(5), 2012. Citations 89
13. **B. M. Friedrich**, E. Fischer-Friedrich, N. S. Gov, S. A. Safran: Sarcomeric pattern formation by actin cluster coalescence, *PLoS Comp. Biol.* **8**(6), 2012. Recommend by F1000, citations 31
- 14. **B. M. Friedrich**, F. Jülicher: Flagellar synchronization independent of hydrodynamic interactions, *Phys. Rev. Lett.* **9**, p. 138102, 2012 (selected as "Editor's suggestion" and for a "Viewpoint" in Physics). Citations 83
15. K. Polotzek, **B. M. Friedrich**: A three-sphere-swimmer for flagellar synchronization, *New J. Phys.* **15**, p. 045005, 2013. Citations 35
- 16. V. Geyer, F. Jülicher, J. Howard, **B.M. Friedrich**: Cell body rocking is a dominant mechanism for flagellar synchronization in a swimming alga, *Proc. Natl. Acad. Sci. U.S.A.* **110**, p. 18058, 2013. Citations 68

17. L. Alvarez, **B.M. Friedrich**, G. Gompper, U.B. Kaupp: The computational sperm cell, *Trends in Cell Biology*, **24**, p. 198, 2014 (selected for cover). Citations 89
18. R. Ma, G.S. Klindt, I.-H. Riedel-Kruse, F. Jülicher, **B.M. Friedrich**: Active phase and amplitude fluctuations of flagellar beating, *Phys. Rev. Lett.* **113**, p. 048101, 2014. Citations 60
19. S. Werner, J.C. Rink, I.-H. Riedel-Kruse, **B.M. Friedrich**: Shape mode analysis exposes movement patterns in biology, *PLoS One*, 0113083, 2014. Citations 24
- 20. S. Werner, T. Stüeckemann, M. Beiran Amigo, J.C. Rink, F. Jülicher, **B.M. Friedrich**: Scaling and regeneration of self-organized patterns, *Phys. Rev. Lett.* **114**, p. 138101, 2015. Selected as “Editor's suggestion”, citations 50
- 21. J.F. Jikeli*, L. Alvarez*, **B.M. Friedrich***, L.G. Wilson*, R. Pascal, R. Colin, M. Pichlo, A. Rennhack, C. Brenker, U.B. Kaupp: Sperm navigation along helical paths in 3D chemoattractant landscapes, *Nature Communications* **6**, 7985, 2015 (* = equal contribution). Citations 114
22. G.S. Klindt, **B.M. Friedrich**: Flagellar swimmers oscillate between pusher- and puller-type swimming. *Phys. Rev. E* **92**, 063019, 2015. Citations 32
23. V.F. Geyer, P. Sartori, **B.M. Friedrich**, F. Jülicher, J. Howard: Independent control of the static and dynamic components of the *Chlamydomonas* flagellar beat, *Current Biology Report* **26**, 1098, 2016. Citations 26
24. **B.M. Friedrich**: Hydrodynamic synchronization of flagellar oscillators. European Physics Journal, Special Topics Issue on “Microswimmers”, 225, 2353–2368, 2016. Citations 22
- 25. G.S. Klindt, C. Ruloff, C. Wagner, **B.M. Friedrich**: Load response of the flagellar beat, *Phys. Rev. Lett.* **117**, 258101, 2016. Citations 27
26. T. Stüeckemann, J. P. Cleland, S. Werner, H. Thi-Kim Vu, Shang-Yun Liu, **B.M. Friedrich**, F. Jülicher, J.C. Rink: Antagonistic self-organizing patterning systems control maintenance and regeneration of the anteroposterior axis in planarians, *Developmental Cell* **40**, 248, 2017. Citations 48
27. C. Tomba, C. Braïni, G. Bugnicourt, F. Cohen, **B.M. Friedrich**, N. Gov, C. Villard: Geometrical determinants of neuronal actin waves, *Frontiers Cellular Neuroscience* **11**(86), 2017. Citations 6
28. G. S. Klindt, C. Ruloff, C. Wagner, **B.M. Friedrich**: In-phase and anti-phase flagellar synchronization by basal coupling, *New Journal of Physics* **19**, 113052, 2017. Citations 9
- 29. J. A. Kromer, S. Märcker, S. Lange, C. Baier, **B.M. Friedrich**: Decision making for sperm chemotaxis in the presence of noise, *PLoS Comp. Biol.*, **14**(4): e1006109, 2018. Citations 13
30. D.A. Hidalgo, S. Werner, O. Wartlick, M. González-Gaitán, **B.M. Friedrich**, F. Jülicher: Dynamic gradient scaling as a critical point of growth control, *Phys. Rev. Lett.* **120**, 198102, 2018. Citations 8
31. **B.M. Friedrich**: Load response of shape-changing microswimmers scales with their energy efficiency, *Phys. Rev. E* **97**, 042416, 2018
32. J. Karschau, M. Zimmerling, **B.M. Friedrich**: Renormalization group theory for percolation in time-varying networks, *Scientific Reports* **8**, 8011, 2018. Citations 7
33. N. Biere, M. Ghaffar, A. Doebbe, D. Jäger, N. Rothe, **B.M. Friedrich**, R. Hofestädt, F. Schreiber, O. Kruse, B. Sommer: Heuristic modeling and 3D stereoscopic visualization of a *Chlamydomonas reinhardtii* cell, *Journal of Integrative Bioinformatics* **15**(2), 2018. Citations 4

- 34. A. Thommen*, S. Werner*, O. Frank*, J. Philipp, O. Knittelfelder, Y. Quek, K. Fahmy, A. Shevchenko, **B.M. Friedrich**, F. Jülicher, Frank, J.C. Rink: Body size-dependent energy storage causes Kleiber's law scaling of the metabolic rate in planarians, *eLife* **8**, e38187, 2019. Citations 9
35. A. Gong, S. Rode, U.B. Kaupp, G. Gompper, J. Elgeti, **B.M. Friedrich**, and L. Alvarez: The steering gaits of sperm, *Phil. Trans. R. Soc. B.* **375**(1792), 20190149, 2019 Citations 2
- 36. H. Morales-Navarrete, H. Nonaka, A. Scholich, F. Segovia-Miranda, W. de Back, K. Meyer, R.L. Bogorad, V. Koteliansky, L. Brusch, Y. Kalaidzidis[†], F. Jülicher[†], **B.M. Friedrich**[†], M. Zerial[†]: Liquid-crystal organization of liver tissue, *eLife* **8**, e44860, 2019 ([†]=shared corresponding author). Citations 8
37. J.A. Kromer, N. de la Cruz, **B.M. Friedrich**: Chemokinetic scattering, trapping, and avoidance of active Brownian particles, *Phys. Rev. Lett.* **124**, 118101, 2020

Preprints / submitted

38. H. Hamzeh, A. Gong, M. Balbach, D. Fridman, H.G. Körschen, R. Pascal, F. Lavryk, A. Rennhack, R. Seifert, A. Hernandez-Clavijo, S. Pifferi, V. Dusend, B.K. Fleischmann, P. Sasse, A. Menini, **B.M. Friedrich**, L. Alvarez, U.B. Kaupp: Deciphering rapid cell signaling and remote control of cell motility by reverse opto-chemical engineering, *submitted*
39. A. Scholich, S. Syga, H. Morales-Navarrete, F. Segovia-Miranda, H. Nonaka, K. Meyer, W. de Back, L. Brusch, Y. Kalaidzidis, M. Zerial, F. Jülicher, **B.M. Friedrich**: Quantification of nematic cell polarity in three-dimensional tissues, *preprint* (arXiv:1904.08886) Citations 2
40. J. Karschau, A. Scholich, J. Wise, H. Morales-Navarrete, Y. Kalaidzidis, M. Zerial, **B.M. Friedrich**: Resilience of three-dimensional sinusoidal networks in liver tissue, *preprint* (arXiv:1912.09929)
41. F. Striggow, M. Medina-Sánchez, V. Magdanz, G.K. Auernhammer, **B.M. Friedrich**, Oliver G. Schmidt: Sperm-driven micromotors moving in oviduct fluid and viscoelastic media, *in revision*
42. S. Lange, **B.M. Friedrich**: Fertilization in the sea: sperm chemotaxis in physiological shear flows, *preprint* (arXiv:1912.09112)
43. M. Novak, B.M. Friedrich: Bayesian gradient sensing in the presence of rotational diffusion, *preprint* (arXiv:2002.08138)

Other publications

- S1. **B.M. Friedrich**: Wege zum Sierpinski-Gitter, *Junge Wissenschaft* **48**, p. 29-31, 1997
- S2. **B. M. Friedrich**: The Dynkin diagrams of rational double points (Part III essay, University of Cambridge), 2002 (arXiv:0506107)
- S3. **B. M. Friedrich**: Periods and Algebraic deRham Cohomology (Diploma thesis), 2004 (arXiv:0506113). Citations 7
- S4. **B.M. Friedrich**: Chemotaxis of Sperm Cells (PhD thesis), TU Dresden, 2008 (available on tud.qucosa.de)
- S5. **B.M. Friedrich**, U.B. Kaupp: Wie Spermien zum Ei finden: Eine schwimmende Nervenzelle, *Physik in unserer Zeit*, **42**, p. 196-200, 2011
- S6. **B.M. Friedrich**, V.F. Geyer: Grünalgen wackeln sich in den Takt, *Physik in unserer Zeit*, **45**(3), p. 113, 2014

S7. **B.M. Friedrich**, I.H. Riedel-Kruse: Flagellar beating: row with the flow. *eLife*, e03804, 2014. Citations 1

S8. J. Baumgart, **B.M. Friedrich**: Fluid dynamics: Swimming across scales, *Nature Physics* **10**, p. 711, 2014. Citations 3

S9. **B.M. Friedrich**: Nonlinear dynamics and fluctuations in biological systems (Habilitation thesis), TU Dresden, 2016 (arXiv:1803.07449)

S10. A. Huber, S. Müller-Stach: Periods and Nori motives. A Series of Modern Surveys in Mathematics. Springer, 2017 (contribution to chapters 11, 12, 14, 15). Citations 39

S11. **B.M. Friedrich**: Schlagkräftiger Mikroantrieb. Physik-Journal der Deutschen Physikalischen Gesellschaft. December 2017

Public Google scholar profile

<https://scholar.google.com/citations?hl=en&user=gTGjuBwAAAAJ>

h-index = 22 with total of 1605 citations (according to google scholar 24.04.2020)

THIRD-PARTY FUNDING

2019-2024	Heisenberg-Fellowship “Coupled systems of active and passive matter” DFG (FR3429/4-1)	477k€
2020-2022	“Predictable collective dynamics of bio-inspired reservoir networks” with Marc Timme Forschungsprojektförderung (im Rahmen der Titelgruppe 70) des Sächsisches Staatsministerium für Wissenschaft und Kunst	154k€ (Σ :308k€)
2019-2022	“Spatio-temporal self-assembly of functional biosilica patterns in diatoms” with Nils Kröger Starting grant for joint PhD projects for PIs of Cluster of Excellence “Physics of Life”	150k€
2019-2021	“Muscle building: dissecting tension-driven myofibrillogenesis in vitro, in vivo and in silico” with Frank Schnorrer, Olivier Pourquie Human Frontiers Science Program (HFSP RGP0052/2018)	272k€ (Σ :960k€)
2019-2021	“Navigation of sperm cells in scalar turbulence” DFG (FR 3429/3-1)	225k€
2018-2020	“Collective, nonlinear dynamics of cilia and flagella” DFG priority program “Microswimmers” SPP 1726 (FR 3429/1-2)	182k€
2015-2018	“Synching noisy flagella” Theory of synchronization in collections of beating flagella, accounting for active flagellar fluctuations DFG priority program “Microswimmers” SPP 1726 (FR 3429/1-1)	174k€
2009-2011	“Statistical physics of active force generators in the cytoskeleton of biological cells” DAAD post-doctoral scholarship	54k€
2010-2011	“Theory of cellular mechano-sensing” “Dean of Faculty” Koshland fellowship of the Weizmann Institute of Science	18k€

INVITED TALKS AT INTERNATIONAL CONFERENCES

1. "Chemotaxis of sperm cells" at *Collective dynamics and pattern formation in active matter systems workshop*, Berlin, 2009
2. "What sperm head wiggling can tell us about flagellar hydrodynamics" at *Symposium jDPG*, Dresden, 2011
3. "Steering along circular and helical paths is robust and efficient" at *1st International CAESAR conference*, Bonn, 2011
4. "Rigidity sensing and cellular forces" at *Minisymposium on Biological Machines*, Rehovot, Israel, 2012
5. "Flagellar synchronization independent of hydrodynamic interactions" at *Active Particles and Microswimmers*, Ringberg, 2013
6. "How Chlamydomonas rocks to synchronize its flagella", Symposium Micro- and Nanomachines, Hannover, 2014
7. "Sperm navigation along helical paths in 3D chemoattractant landscapes" at MOTIMO workshop, Toulouse, 2015
8. "Principles of flagellar synchronization" at 'Microswimmers' summer school, FZ Jülich, 2015
9. "The navigation principle of marine sperm chemotaxis" at 'The Omnipresent Cilium – Structure, Signalling, and Motion', Bonn, 2015
10. "Modeling scaling and regeneration of self-organized patterns" at *EMBO conference: 'The Molecular & Cellular Basis of Regeneration and Tissue Repair'*, Paestum, Italy, 2016
11. Speaker invitation at summer school: 'Living and Active Matter', Corsica, 2016, *not attended*
12. "Biaxial nematic liquid crystal order in liver tissue" at *BioSoft Frontiers conference*, Tel Aviv, 2016
13. Key note speaker "Navigation at the micro-scale", TNT 2017, Dresden
14. "Nonlinear dynamics of beating cilia and flagella: Swimming, steering, and synchronization" DPG March Meeting, Berlin, 2018
15. Speaker invitation "Neurophysics of Sensory Navigation: Mechanisms, Models and Biomimetic Applications", KITP Santa Barbara, 2018, *not attended*
16. "How do single cells navigate despite sensory and motility noise?" at CECAM 'Active Matter and Artificial Intelligence Workshop workshop', Lausanne, 2019
17. Speaker invitation "Myogenesis - from forces to structure and treatment", Les Treilles, 2020, event canceled

Additionally, I have given more than 65 contributed talks at conferences and external seminars.

TEACHING EXPERIENCE

Summer term 2020	Theoretische Mechanik für das Lehramt at TU Dresden (3h/week, weekly exercises, organization of 5 tutorials per week; Currently prepared as online course)
Winter term 2019/20	Biological Hydrodynamics at TU Dresden - Navier-Stokes equation, liquid crystals, active gel theory (2h/week, 2h/week tutorial, Master, Faculty of Physics & CMCB)
Summer term 2019	Tutor 'Classical Mechanics' at TU Dresden
Winter term 2018/19	Stochastic processes (with programming exercises) at TU Dresden - Langevin equations, Fokker-Planck formalism, numerical methods (2h/week, 1h/week tutorial, Master, Faculty of Physics & CMCB) Tutorial: Rechenmethoden in der Physik at TU Dresden (2h/week, Bachelor, Faculty of Physics) Microswimmer lecture series and reading seminar at TU Dresden (2h/week, Master, Faculties of Chemistry, Physics, Biology, Mathematics; jointly with J. Simmchen, V. Magdanz)
Winter term 2016/17	Statistical physics of information at TU Dresden - Hauptseminar (2h/week, Master, Faculty of Physics & Faculty of Electrical and Computer Engineering; jointly with Dr. Dörpinghaus)
Summer term 2016	Nonlinear dynamics and stochastic processes at TU Dresden - stability, bifurcation theory, pattern formation, Langevin equations (2h/week, Master, Faculty of Physics)
Summer term 2015	Continuums mechanics for Biological Physics at TU Dresden - fluid dynamics, elasticity theory, applications in biological physics (2h/week lecture, 2h/week tutorial, Master, Biotec)
Winter term 2014/15	Kinematics of noisy motion at TU Dresden (3x 2h lecture series, Master, Faculty of Mathematics)
Summer term 2014	Continuums mechanics for Biological Physics at TU Dresden (2h/week lecture, Master, Faculty of Physics; jointly with Dr. Fischer-Friedrich)
Summer term 2007	Tutor „Physikpraktikum“ at TU Dresden
Winter term 2006/07	Tutor „Theoretische Mechanik“ at TU Dresden
Summer term 2004	Tutor „Algebra I (Gruppen, Ringe, Körper)“ at Universität Leipzig

SUPERVISION OF STUDENTS AND POST-DOCS

PhD theses completed under my supervision

- André Scholich: Functional liver tissue architecture and cell packing order (defense 2018, *magna cum laude*)
- Gary Klindt: Hydrodynamic synchronization in the presence of flagellar noise (defense 2017, *magna cum laude*)
- Steffen Werner: Physics of Regeneration in the Flatworm *Planaria* (defense 2016, *magna cum laude*)

Current supervision of PhD students

Since 12/2017: Anton Solovev: Collective dynamics in cilia carpets

Since 10/2019: Iaroslav Babenko: Pattern formation of biosilica patterns in diatoms

Since 11/2019: Francince Kolley: Mathematical modeling of tension-driven myofibrillogenesis

Bachelor & Master theses completed under my supervision

- Maja Grützmann: Theoretical description of information processing in artificial cells (Bachelor, 2020, *submitted*)
- Marius Asal: Self-organization of transport networks in liver tissue (Master, 2016, *grade 1.7*)
- Simon Syga, Nematic order in complex tissues (Bachelor, 2014, *grade 1.0*)
- Philipp Lätzel, Sperm chemotactic signaling (Diplom, 2007, *grade 1.3*)

Supervision of Post-Docs

Since 2019: Dr. Ian Estabrook: Order-parameter analysis of myofibrillogenesis data

Since 2017: Dr. Maja Novak: Bayesian decision theory of navigation

2018: Dr. Stephan Bialonski: Collective dynamics in cilia carpets (now faculty at FH Aachen)

2017-2019: Dr. Steffen Lange: Search strategies in dynamic environments (now group leader HTW)

2016-2017: Dr. Justus Kromer: Optimal decision making in cellular navigation (now Stanford)

2016-2018: Dr. Jens Karschau: Self-organized pattern formation in liver tissue (now OncoRay)

Supervision of summer students (Five DAAD-RISE scholarships attracted to our group 2013-2020)

2020: DAAD-RISE scholarship awarded, but canceled

2019: Lidiia Nadporozhskaia, Limit-cycle analysis of flagellar bending waves

2018: Andre Kam, Motility of biohybrid sperm-bots

2017: Noelia de la Cruz, A 'hot-n-cold' game of optimal search, contribution to *Phys. Rev. Lett.*

2017: Jonathon Wise, Statistical network reconstruction, contribution to preprint

2014: Yihui Quek, Coupling of metabolism and growth dynamics, contribution to *eLife*

2013: Manuel Beiran, Principles of scalable pattern formation, contribution to *Phys. Rev. Lett.*

2012: Katja Polotzek, Flagellar synchronization, published in *New Journal of Physics*

2007: Jing Yang, Hydrodynamics of a swimming green alga

ORGANIZATION OF CONFERENCES

Organization of BioNav workshop: Principles of biological and robotic navigation

Co-organizers: Samuel Sanchez (IBEC, Barcelona), U. Benjamin Kaupp (caesar, Bonn)
29.-31.08.2016, Max Planck Institute for the Physics of Complex Systems, Dresden
funding by Max Planck Society

Organization summer school "Micromotors - theory, fabrication and application"

Co-organizer: Juliane Simmchen (Faculty of Chemistry and Food Chemistry, TU Dresden)
13.-19.08.2017, TU Dresden
funding by Zukunftsinitiative

Organization Heraeus seminar "Physics and physiology of cilia and flagella"

Co-organizers: Timo Strünker (University of Münster), Veikko Geyer (CMBC, TU Dresden)
27.-30.01.2019, Physikzentrum Bad Honnef
funding by Heraeus foundation

Organization Focus Session at DPG March Meeting

Co-organizer: Veikko Geyer (CMCB, TU Dresden)
31.03.-05.04.2019
funding by Deutsche Physikalische Gesellschaft

Interdisciplinary lecture series on biological and artificial microswimmers, TU Dresden

Organizers: J. Simmchen (Chemistry, TUD), V. Geyer (CMCB, TUD), V. Magdanz (Applied Zoology, TUD), A. Revilla (Biology, TUD), A. Sharma (IPF), and myself
Winter and summer term: 2018-2019
funding by School of Science, "Connecting faculties" initiative

Public outreach

Popular science articles in journal '*Physik in unserer Zeit*', targeted to high school teachers
2011-2019: Booth at Dresden 'Long Night of Science' (2019: VIP tour for Mayor of Dresden)
2013, 2015, 2017: Popular science talks at high schools

2020 "Physik am Samstag" (planned)