

Curriculum Vitae (last update 9/6/2016)**Daniel P. Zitterbart**

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Current Positions

11/2015 – present	Postdoctoral Research Scholar , Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution
07/2014 – present	Lecturer , Institute for condensed matter physics, Biophysics Group, University of Erlangen-Nuremberg, Erlangen
12/2012 – present	Research Scientist (tenure track) , Ocean Acoustics Lab, Alfred-Wegener-Institute Helmholtz Centre for Polar and Marine Research, Bremerhaven

Previous Positions

09/2009 – 11/2012	PhD Student , Ocean Acoustics Lab, Alfred-Wegener-Institute Helmholtz Centre for Polar and Marine Research
09/2009 – 11/2012	Researcher , Institute for condensed matter physics, Biophysics Group, University of Erlangen-Nuremberg
08/2007 – 08/2009	Researcher (Overwinterer) , Geophysical Observatory, Neumayer Station, Antarctica, Alfred-Wegener-Institute Helmholtz Centre for Polar and Marine Research
06/2007 – 08/2007	Visiting Scientist , Tang Biophysical Laboratory, Brown University, Providence, Rhode Island, USA
12/2006 – 06/2007	Researcher , Institute for condensed matter physics, Biophysics Group, University of Erlangen-Nuremberg
11/2004 – 11/2006	Research Assistant , Institute for condensed matter physics, Biophysics Group, University of Erlangen-Nuremberg
01/2001 – 01/2002	Research Assistant , Institute for Optics, University of Erlangen-Nuremberg

Education

11/2014 –	Habilitation in Physics, Friedrich-Alexander-University of Erlangen-Nuremberg
11/2006 – 04/2013	PhD in Physics (Dr. rer. nat.), Friedrich-Alexander-University of Erlangen-Nuremberg
10/2003 – 11/2006	Diploma (Physics), Friedrich-Alexander-University of Erlangen-Nuremberg
10/2002 – 06/2003	Abroad Studies, Sociology and Philosophy, Gothenburg University, Sweden
10/2000 – 06/2002	Vordiplom (Physics), Friedrich-Alexander-University of Erlangen-Nuremberg

Awards

- Doherty Postdoctoral Scholarship Award, Woods Hole Oceanographic Institution (2015)
- Briese-Award for Marine Science for Young Investigators, Leibniz Institute for Baltic Sea Research (2013)
- Highlights of 2013 collection, New Journal of Physics for the article „Origin of traveling waves in an emperor penguin huddle” (2013)
- Best Poster Prize, International Summer School for Pattern Recognition (ISSPR), British Society of Pattern Recognition (2010)
- Ohmprize of the University of Erlangen for extraordinary thesis in physics (2007)
- American Society of Cell Biology International Student Travel Award (2007)
- Prize of the German Chemical Industry fund for the valedictorian in chemistry and physics (1999)

Academic services

- Reviews: Proceedings of the National Academy of Sciences (PNAS), Netherlands Organization for Scientific Research (NOW), PLOS Computational Biology (PLOS CB), Rolex Awards
- Editorial: Guest editor for a special issue on “Collective phenomena in living matter”, Journal of Physics D: Applied Physics (JPhysD), IOP Publishing

Expeditions

2016, SPOT3, Nov-Jan 2016, Neumayer Station III, Antarctica (Project leader)
 2016, SAMBAY 2, Aug-Oct 2016, San Antonio Bay, Argentina (Expedition leader)
 2016, CapeRace 2016, Jun-Jul 2016, New Foundland, Canada (Project leader)
 2016, ETAW 2016, Jan-Mar 2016, Hawaii, USA (Expedition leader)
 2015, SAMBAY 1, Aug-Oct 2015, San Antonio Bay, Argentina (Expedition leader)
 2015, CAM1, Jun-Jul 2015, New Foundland, Canada (Project leader)
 2014, ETAW 2014, Jun-Aug 2014, North Stradbroke Island, Australia (Expedition leader)
 2014, SPOT2, Jan-Feb 2013/2014, Neumayer Station III, Antarctica (Project leader)
 2013, antaviaSPOT, Oct-Dec 2013, Dumont d'Urville, Antarctica, (Project leader)
 2012, SPOT1, Dec-Feb 2012/2013, Neumayer Station III, Antarctica, (Project leader)
 2012, ANT 29-2 Nov-Dec 2012, RV Polarstern (Kapstadt - Antarctica - Punta Arenas), (Project leader)
 2012, ARK 27-3 Aug-Oct 2012 (NOB), RV Polarstern, (remote support)
 2012, ANT 28-4 Apr 2012 (NOB), RV Polarstern, Antarctica, (Project leader)
 2011, ANT 28-2 Dec 2011 (NOB), RV Polarstern, Antarctica, (Project leader)
 2011, ANT 27-2 Nov-Feb 2010/2011, RV Polarstern, (Scientist)
 2010, ANT 26-3 Jan-Apr 2010, RV Polarstern, (Project leader)
 2009, ARK 24-1 June/July 2009, RV Polarstern, (Scientist)
 2009, ANT-Land 2008/2009, Neumayer Station, Antarctica, (Scientist)
 2008, Überwinterung 2008, Neumayer Station, Antarctica, (Scientist)
 2008, ANT-Land 2007/2008, Neumayer Station, Antarctica (Scientist)

Supervised Students

- **Richard Gerum**, PhD Student, (co-supervision), since 2013
Self-propelled particle models to describe emergence phenomena in Penguin colonies
- **Hanna Michel**, Master Thesis, 2014
Trajectory analysis on free living marine mammals using thermographic position acquisition
- **Matthias Späth**, Bachelor Thesis, 2014
Classification of bird species using their projected flight path
- **Sebastian Richter**, PhD Student, 2011 – 2015
Social Interaction Networks in Penguin Colonies
- **Emmeran Sollner**, Diploma Thesis (MSc Equivalent), 2012
Mobile Observatories - two observation systems for Emperor Penguins
- **Sebastian Richter**, Diploma Thesis (MSc Equivalent), 2011:
Development of an autonomous observation platform for polar regions
- **Richard Gerum** (co-supervision), Bachelor Thesis, 2011:
Modelling of huddling behavior of penguins using self-propelled particle models

Invited Talks

- **Whale and penguin monitoring using computer vision and acoustic methods**
Hawaii Institute for Marine Biology Seminar, Hawaii University (HU), Honolulu, 01.03.2016
- **Towards a mitigation performance metric – Thermal imaging detection of whales as a model system**
Workshop on: Incorporating new mitigation technologies into guidelines for seismic surveys and other underwater acoustic activities: Producing performance standards, 21st Biennial Conference on the Biology of Marine Mammals, San Francisco, 13.-18. December 2015
- **Whale detection using thermography**
Workshop on Mitigation, European Cetacean Society, 29th ECS Conference, Malta, 21.03.2015
- **Whale and penguin monitoring using computer vision and acoustic methods in polar oceans**
AOPE Seminar, Woods Hole Oceanographic Institution (WHOI), 04.02.2015
- **Abenteuer Forschung: Physik an Walen und Pinguinen in der Antarktis,**

- MINT-Vorträge am HSG, Hanns-Seidel-Gymnasium Aschaffenburg, 5.11.2014
- **Structure in Penguin Colonies**
Symposium of the German Ornithological Society, Xanten, 18.10.2014
- **Remote Sensing of Whales Using Thermal and Visual Imaging**
Ocean and Resources Engineering Seminar, SOEST, University of Hawaii, Hawaii, 26. Februar 2014
- **Physics in Penguin Colonies**
Physikalisches Kolloquium der Universität Bayreuth, Bayreuth, 25. Juni 2013
- **Biodiversity in your palm**
Southeast Asian Gateway Evolution, Berlin, 11-15. März 2013
- **Collective motion in penguin colonies**
Collective Motion in Biological Systems: from Data to Models, ZiF Workshop, Bochum, 05-09. November 2012
- **Biodiversity in your palm**
Biodiversity Heritage Library, Finale Event, Berlin, Juni 2012
- **anymals.org – Biodiversität im Hosentaschenformat**
4. Nationales Forum zur biologischen Vielfalt, Bundesministeriums für Umwelt, Naturschutz, Bau und Reaktorsicherheit, Berlin, 8. November 2011
- **Intercellular communication and active cytoskeletal processes. New applications of Traction Microscopy.**
Division of surgical research, Brown Medical School, Providence, RI, USA, 6. Juni 2007

Selected Media Presence

- Crowd Control, **National Geographic**, Juni 2014
- Highlights of 2013, **New Journal of Physics**, The origin of traveling waves in an emperor penguin huddle, 08.05.2014
- The most viewed papers in Science, **Nature**, The origin of traveling waves in an emperor penguin huddle, 16.01.2014, doi:10.1038/505265e
- Wave if you're cold! The amazing patterns that keep huddling emperor penguins protected, **The Independent**, 16.12.2013
- Fancy footwork! These huddling penguins do the wave to stay warm, **Los Angeles Times**, 18.12.2013
- Start-stop traffic helps penguin huddles grow, **New Scientist**, 17.12.2013
- Bring Me Your Huddled Penguins Who Move Like Cars in Heavy Traffic, **Scientific American**, 16.12.2013
- Penguins Do the Wave to Keep Warm, **National Geographic**, 15.06.2011
- Emperor Penguins, Radio Interview, **BBC World Service**, Newshour, 07.06.2011
- Penguin Groups Use Physics to Avoid Crush and Keep Warm, **Scientific American**, USA, June 2011
- In Penguin Huddle, Researchers Find a Wave of Warmth, **New York Times**, 07.06.2011
- Penguin huddle secrets revealed with time lapse footage, **BBC News**, UK, 02.06.2011

Professional Memberships

Since 2012: German Society for Polar Research (DGP)
 since 2006: German Physical Society (DPG)
 2006 – 2008: American Society of Cell Biology
 2005 – 2008: Biophysical Society

Refereed Publications in Press

1. Sorensen S., Mahoney A., **Zitterbart DP.**, Kambahmettu C.
A Virtual Reality Framework for Multimodal Imagery in Vessels in Polar Regions
(In press, Lecture Notes in Computer Science (LNCS))
2. Gerum R., Richter S., Fabry B., **Zitterbart DP.**
ClickPoints – a scientific image display and analysis tool
(In press, Methods in Ecology and Evolution)

Refereed publications

1. Thomisch K., Boebel O., Clark CW., Hagen W., Spiesecke S., **Zitterbart DP.**, Van Opzeeland I. Spatio-temporal patterns in acoustic presence and distribution of Antarctic blue whales *Balaenoptera musculus intermedia* in the Weddell Sea. *Endang Species Res* 30:239-253 (2016) doi:10.3354/esr00739
2. Cristofari R., Bertorelle G., Ancel A., Benazzo A., Le Maho Y., Ponganis PJ., Stenseth NC., Trathan PN., Whittington JD., Zanetti E., **Zitterbart DP.**, Le Bohec C. & Trucchi E. Full circumpolar migration ensures evolutionary unity in the Emperor penguin, *Nature Communications*, 7:11842 doi: 10.1038/ncomms11842 (2016)
3. Fais A, Lewis TP, **Zitterbart DP.**, Álvarez O, Tejedor A, Aguilar Soto N (2016) Abundance and Distribution of Sperm Whales in the Canary Islands: Can Sperm Whales in the Archipelago Sustain the Current Level of Ship-Strike Mortalities? *PLoS ONE* 11(3): e0150660. doi:10.1371/journal.pone.0150660
4. Thomisch K., Boebel O., **Zitterbart DP.**, Samaran F., Van Parijs S., van Opzeeland I. Effects of duty cycling of passive acoustic recordings on acoustic presence metrics of baleen whales. *J. Acoust. Soc. Am.* 138, 267 (2015); <http://dx.doi.org/10.1121/1.4922703>
5. Bombosch A., **Zitterbart DP.**, van Opzeeland IC., Frickenhaus S., Wisz MS, Boebel O. Predictive habitat modelling of humpback (*Megaptera novaeangliae*) and Antarctic minke (*Balaenoptera bonaerensis*) whales in the Southern Ocean as a planning tool for seismic surveys, *Deep Sea Research Part I: Oceanographic Research Papers*, Volume 91, September 2014, Pages 101-114, ISSN 0967-0637
6. **Zitterbart DP.**, Richter S., Spiekermann G., Behrens LK., Regnery J., Fontes RP, Hänssler T., König-Langlo G., Weller R., Fabry B. Are environmental factors responsible for changed breeding behaviour in emperor penguins? *Antarctic Science*, 2014, DOI: <http://dx.doi.org/10.1017/S0954102014000285>
7. Gerum R., Fabry B., Metzner C., Beaulieu M., Ancel A., **Zitterbart DP.** Origin of traveling waves in an emperor penguin huddle *New Journal of Physics* 15 (2013) 125022 (17pp) doi:10.1088/1367-2630/15/12/125022
8. **Zitterbart DP.**, Kindermann L., Burkhardt E., Boebel O. Round-the-Clock Protection of Whales from Underwater Noise by Thermal Imaging *PLoS ONE* 8(8): e71217. doi:10.1371/journal.pone.0071217 (2013)
9. Weissenberger J. and **Zitterbart DP.** Surveillance of Marine Mammals in the Safety Zone around an Air Gun Array with the Help of a 360° Infrared Camera System (2012) *SPE/APPEA International Conference on Health, Safety, and Environment in Oil and Gas Exploration and Production*. doi: 10.2118/158038-MS (peer reviewed full conference paper)
10. **Zitterbart DP.**, Wienecke B., Butler JP., Fabry B. Coordinated movements prevent jamming in an Emperor penguin huddle. *PLoS ONE* 6(6): e20260. doi:10.1371/journal.pone.0020260 (2011)
11. Mierke CT., Kollmannsberger P., **Zitterbart DP.**, Diez G., Koch TM., Marg S., Ziegler WH., Goldmann WH., Fabry B. Vinculin facilitates cell invasion into 3D collagen matrices. *J Biol Chem*, 2010 (<http://www.jbc.org/cgi/doi/10.1074/jbc.M109.087171>)

12. Oakes PW., Morin NA., **Zitterbart DP.**, Patel D., Fabry B., Reichner JS., Tang JX.
Neutrophil morphology and migration are affected by substrate elasticity.
Blood, 2009; DOI 10.1182/blood-2008-11-191445.
13. Reichner JS., Oakes PW., Patel DC., Morin NA., **Zitterbart DP.**, Fabry B., Tang JX
Neutrophil mechanosensing.
Cytokine, 2009; DOI 10.1016/j.cyto.2009.07.277
14. Roesel D., Brabek J., Tolde O., Mierke CT., **Zitterbart DP.**, Raupach C., Bicanova K., Kollmannsberger P., Pankova D., Vesely P., Folk P., Fabry B.
Up-Regulation of Rho/ROCK Signaling in Sarcoma Cells Drives Invasion and Increased Generation of Protrusive Forces.
Mol Cancer Res 2008 6: 1410-1420 doi: 10.1158/1541-7786.MCR-07-2174
15. Mierke CT., **Zitterbart DP.**, Kollmannsberger P., Raupach C., Schloetzer-Schrehardt U., Goecke T., Behrens J., Fabry B.
Breakdown of barrier function of the endothelium in tumor cell transmigration.
Biophys J 2008 94: 2832-2846
16. Mierke CT., Kollmannsberger P., **Zitterbart DP.**, Diez G., Smith J., Fabry B., Goldmann WH.
Regulation of cell contractility through vinculin and its domains.
Biophys J 94:661-670, 2008
17. Metzner C., Raupach C., **Zitterbart DP.**, Fabry B.
Simple model of cytoskeletal fluctuations.
Phys. Rev. E 76, 021925 (2007)
18. Raupach C.*, **Zitterbart DP.***, Mierke CT., Metzner C., Mueller FA., Fabry B. (*contributed equally).
Stress fluctuations and motion of cytoskeletal-bound markers.
Phys. Rev. E 76, 011918 (2007)

Patents

1. **Zitterbart DP.**, Kindermann L., Boebel O.
Method for Automated Real-Time Acquisition of Marine Mammals
US Patent US8941728 B2, <http://www.google.com/patents/US8941728>