

Curriculum Vitae of Dr. rer. nat. Kirsten Harth

Personal Information

Full name: Kirsten Harth
Date of birth 14.11.1985
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School Education: 1992-1996 Grundschule Weferlingen
1996-2004 Gymnasium Weferlingen, one school year skipped,
Abitur (highest school degree) with excellence
(grade 1.0)

Other education / private interests: music (singer & accordionist in band Celtic Chaos since 2004, piano playing, several other musical groups during previous years, winner several local prizes), foreign languages (fluent English, good French, basic Spanish and Dutch) and cultures, traveling, reading

University Education:

2004-2010 Diploma Studies Physics, Otto-von-Guericke Universität Magdeburg, with excellence (grade 1.1)
Topic: Coupling of Pattern Relaxation and Flow in Free-Standing Smectic Films
2006-2017 Parallel Diploma Studies in Mathematics, focus: FEM in hydrodynamics, graduation scheduled in fall 2017

Postgraduate research / work experience:

2010-2016 scientific employee (part time) at Uni Magdeburg, different research projects
2011-2016 work on PhD, defense 04/2016 ('summa cum laude', top 5%),
"Episodes of the Life and Death of Thin Fluid Membranes - Patterns and Dynamics at the Crossover from two to three Dimensions"
2016-2017 Postdoctoral researchert in Physics of Fluids (D. Lohse), Max Planck Center and University of Twente, The Netherlands
2017-2019 DFG Fellowship in the Physics of Fluids Group, Max Planck Center and University of Twente

Self-acquired funded research projects / fellowships:

- 2017-2019 **DFG Fellowship**, Topic: "Drop Impact on Hot Plates", at Physics of Fluids, Max Planck Center and University of Twente, The Netherlands
- 2009-2012 **DLR/SNSB/ESA financed project GAGa** (*Granular Anisotropic GAses*) within **REXUS / BEXUS** program for a student experiment on a suborbital sounding rocket flight, topic: 3D granular gases of rodlike grains in microgravity; position: Principal Investigator / Team leader, together with *GAGa DropT* resulting in two follow-up projects of the German Aerospace Center DLR, concerning drop tower and sounding rocket experiments and inclusion into the ESA topical team working on vibrated granular matter in microgravity
- 2012-2014 **ESA financed project GAGa DropT** (*Granular Anisotropic Gases in Drop Tower Experiments*) within **Drop Your Thesis!** program, position: Principal Investigator / Team leader
- 2011, 2013 holder of **RISE** internships by **German Academic Exchange Service (DAAD)** for hosting two summer students from the USA
- Several **travel / travel aid grants** for conference attendance e.g. by DAAD (Powders and Grains 2013), COSPAR (Committee of Space Research) for Cospar meeting 2014 (Moscow), Gordon Conference Granular & Granular Fluid Flow 2012, Ferroelectrics 2011 (Canada)

Experience in other research groups abroad:

- 2010, 2011 2 months research visit and 2 weeks research visit at U Colorado (Boulder, USA), Prof. N. Clark; topics: light-induced whispering gallery modes in liquid crystals, coalescence dynamics in two dimensions
- 2012, 2013 research visit at North Carolina State University (USA), K. Daniels, Experiments on 2D granular fluids of anisometric grains
- 2012, 2013, 2015 2-weeks research visits at KFKI Budapest (HU), T. Börzsönyi, Experiments on shear flow and alignment of anisometric grains

Teaching experience:

- 2007-2010 teaching assistant for younger students, seminars and exercises, tutorials in analysis (mathematics, 2 years + tutorials), experimental physics basic course (2 years), lab course in experimental physics
- 2011-2015 teaching responsibilities within regular work contract, seminars for students of all different levels of studies, seminars include Soft Matter Physics, Complex Fluids, Pattern Formation and Self Organization, Fundamentals of Experimental Physics for Engineers (Mechanical, Electrical, Biotechnical, and Chemical Engineering)
- 2015, 2016 multi-disciplinary Lecture "Research in Microgravity" for students of engineering and natural sciences of all levels of study, completely new lecture
- Active contributions to preparation and lectures by Prof. Stannarius for primary school children (Topic: Physics of Music (2008), Physics of Sand (2015)) and exp. physics special Christmas lectures (2009, 2010, 2014, 2015)

Supervision / Mentoring of students and pupils:

- 2011-2012 supervision of Diploma thesis (similar to master thesis, 12 months), topic: Oscillating soap and smectic bubbles (K. May)

- 2012, 2013 supervision of three study works (similar to Bachelor Thesis, 6 months), topics involving dynamics in free-standing smectic films and smectic shells (M. Weyland, S. Günther, P. Bader)
- 2011, 2013 acquisition of a DAAD-fellowship and supervision of RISE internship holder (undergraduate), topics: Creeping Flow in Gran. Tumblers (F. Barnum), Frustration in confined sphere packings (A. Mauney)
- 2014, 2015 supervision of two summer students (1st year PhD) within IRES program (grant holder: A. Jakli, Kent State University, USA), topics: Dynamic Interface Tensions of Smectic Films to Surfactant Solutions (L. Buttaro, J. Honaker), Rupture of smectic films in viscous environment (J. Honaker);
- Sept.-Oct. 2015: supervision of an undergraduate student from Luxembourg University, topic: Instabilities during relaxation of smectic bubbles (N. Mooij)
- since 2011: supervision of >5 internships (2 weeks) of school children ages 14-17 on topics of granular materials related to microgravity experiments, rupture of thin films

Membership in scientific societies

German Physical Society (**DPG**), American Physical Society (**APS**), since 2013 founding member of the “Magdeburger Arbeitsgemeinschaft für Forschung unter Raumfahrt- und Schwerelosigkeitsbedingungen” (Topical team for research in space and microgravity conditions, **MARS**, www.mars.ovgu.de)

10 selected peer-reviewed publications

- **K. Harth**, U. Kornek, T. Trittel, U. Strachauer, S. Höme, K. Will, R. Stannarius, *Granular gases of rod-shaped grains in microgravity*, PRL 110 144102 (2013)
- **K. Harth**, T. Trittel, S. Wegner, R. Stannarius, *Free Cooling of a Granular Gas of Rodlike Grains in Microgravity*, Phys. Rev. Lett. 120, 214301 (2018); **Front cover** of the journal
- S. Waitukaitis, **K. Harth**, M. van Hecke, *From Bouncing to Floating: The Leidenfrost Effect with Hydrogel Spheres*, Phys. Rev. Lett. 121, 048001 (2018)
- R. Stannarius, **K. Harth**, *Defect interactions in anisotropic twodimensional fluids*, PRL 117 157801 (2016); **Front cover** of the journal
- **K. Harth**, L. Buttaro, J. Honaker, R. Stannarius, *Dynamic interface tension of a smectic liquid crystal in anionic surfactant solutions*, Phys. Chem. Chem. Phys., 17 030201 (2015)
- **K. Harth**, A. Mauney, R. Stannarius, *Frustrated packing of spheres in a container under symmetry-breaking bias*, PRE 91 030201(R) (2015)
- K. May, **K. Harth**, T. Trittel, R. Stannarius, *Dynamics of freely floating smectic bubbles*, Europhys. Lett. 100, 16003 (2012)
- **K. Harth**, B. Schulz, C. Bahr, R. Stannarius, *Atomic force microscopy of menisci of free-standing smectic films*, Soft Matter 7, 7103 (2011)
- **K. Harth**, A. Eremin, R. Stannarius, *Vortex flow in free-standing smectic C films driven by elastic distortions*, Soft Matter 7, 2858 (2011)
- R. Stannarius, **K. Harth**, *Inclusions in free-standing smectic films* (Book Chapter in “Particles in Liquid Crystals”), Editors: J. Lagerwall, G. Scalia, World Scientific (2016)

Prizes and Awards

- 2014 Young Researcher Award of the German Liquid Crystal Society for research on coalescence in quasi-2D fluids
- nominated for the Dissertation Award 2017 of the Section Condensed Matter (SKM) of the German Physical Society (DPG), one of 4 finalists

- Team leader of winning teams of ESA Drop Your Thesis! 2012 and ESA/DLR/SNSB REXUS/BEXUS (call 2009) for experiments on granular gases in microgravity
- Poster Prizes: Powders & Grains 2013 ("Granular Gases of Elongated Grains in Microgravity"), Granular Matter in Microgravity 2015 ("Influence of the microgravity platform on the preparation and spatial properties of 3D granular gases")

Invited Presentations, Conference Organization

- **Chair** of the 2016 Gordon Research Seminar "Granular Matter", *invited discussion leader* Gordon Research Conference "Granular Matter"
- *invited speaker (Tutorial)* at Wilhelm and Else Heraeus School "Physics in Micro-Gravity" 2016, *invited talk* during XLIII Winter Meeting of Statistical Physics, Taxco (Mexico, 2014), *invited talk* at the German Physical Society Spring Meeting in Dresden (2017)
- *solicited talks* at Gordon Research Conference Granular & Granular-fluid Flow 2012 (Granular Gases of Elongated Grains), Gordon Research Seminar Granular and Granular-Fluid Flow (Confined Granular Packings under Symmetry-Breaking Bias)
- *Invited seminars*: Max Planck Institute of Pattern formation and self-organization, Göttingen (S. Herminghaus, 2010, Coupling of patterns and flow in free-standing smectic films); Univ. Of Colorado at Boulder, USA (N. Clark, Smectic Bubbles, 2011); CNRS Bordeaux, France (P. Loudet, Patterns and Flow in Smectic Films, 2012); Uni Erlangen-Nürnberg (T. Pöschel, 2014, Granular gases of elongated grains in microgravity), U. Twente (D. van der Meer, 2015, Relaxation and Rupture of Smectic Bubbles); UPenn (2016)
- member of *organizing committee* of Int. Conference on Ferroelectric Liquid Crystals 2013, German Workshop on Liquid Crystals 2012 both in Magdeburg

Conference Presentations on differing fields of research (selection)

- American Physical Society Spring Meetings (2013, 2014, 2015, 2016, 2017, 2018), DFD Meeting (2015)
- Spring meeting of German Physical Society (DPG-Tagung) (2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018)
- Gordon Research Conferences Granular Materials (2012, 2014, 2016, 2018), Liquid Crystals (2011)
- International Liquid Crystal Conferences: Mainz, Germany (2012), Kent, USA (2016)
- European Liquid Crystal Conferences: Krakow, Poland (2011), Rhodes, Greece (2013)
 - Powders and Grains, Sydney, Australia (2013); Powders and Grains, Montpellier, France (2017), Frontiers of Soft Matter Symposium, Boulder, USA (2012), Heraeus Seminar on Active Matter, Bad Honnef, Germany (2014)
- German Conference on Liquid Crystals Magdeburg (2008, 2014), Stuttgart (2009), Hamburg (2011); Joint German-British LC conference Edinburgh, UK (2016)
- Dynamics Days Europe: Göttingen, Germany (2009), Bristol, UK (2010), Bayreuth, Germany (2014)
- ESA PAC Symposia: Hyeres, France (2011), Tromsø, Norway (2015); Committee on Space Research (COSPAR) Meeting, Drop Tower Days, Moscow, Russia (2014)
- Member of the German Delegation to the German-Chinese Workshop on Microgravity Research, Hangzhou, China (2015)

Miscellaneous:

active contributions in preparation, participation, experiment execution and evaluation of results from 2 sounding rocket launch campaigns in ESRANGE, Sweden (major contribution to REXUS in 2011, TEXUS in 2015, Blue Origin 9 in 2018), 1 ISS-campaign with project OASIS-CO (07/2015-13/2016), >5 drop tower (Bremen, Germany, 2012-2016) and >5 DLR parabolic flight campaigns (Bordeaux, France, 2010-2016).