

CONTACT INFORMATION	Janelia Research Campus Advanced Imaging Center 19700 Helix Drive Ashburn, VA 20147 USA	Phone: +1 (202) 527-8121 E-mail: boehmu@janelia.hhmi.org Home: ulrikeboehm.org
SUMMARY	Physicist, microscope builder & data scientist with a passion for community building/engagement, outreach, and teaching: I have over ten years' experience in building and running advanced light microscopy systems, analysis of microscopy data, and development of image acquisition & analysis workflows. Furthermore, I am highly engaged in community building/engagement, outreach, and teaching activities focusing on community service, women/diversity in science, open science, and microscopy for more than 15 years.	
RESEARCH INTERESTS	<ul style="list-style-type: none"> <li>• Microscope design, development, and application across a wide range of biological models</li> <li>• Development of image and data processing and analysis tools</li> <li>• Machine learning and its application in microscopic image analysis</li> <li>• Statistical methods for large datasets</li> <li>• Open software and hardware tools for imaging and microscopy</li> </ul>	
POSITIONS	<p><b>Research Specialist</b> 2019 - present Janelia Research Campus, Advanced Imaging Center, Ashburn, VA, USA</p> <ul style="list-style-type: none"> <li>• Handling and troubleshooting of advanced light microscopes (iPALM, Lattice Light Sheet Microscope, SiMView Light Sheet Microscope, Aberration Corrected Multifocal Microscope, MOSAIC, FIB-SEM, cryo-SIM, etc), sample preparation and image analysis</li> <li>• Support of (inter)national visitors during technical consultations and their imaging sessions at the microscopes of Janelia's Advanced Imaging Center</li> <li>• Development and implementation of new image and data analysis strategies for users from around the world</li> <li>• Review of proposal drafts, proposals and grants submitted to the Advanced Imaging Center</li> <li>• Design and realization of microscopy and data analysis workshops and conferences</li> </ul> <p><b>Postdoctoral Research Fellow</b> 2017 - 2018 National Institutes of Health, National Cancer Institute, Bethesda, MD, USA</p> <ul style="list-style-type: none"> <li>• Design and construction a microscope for live-cell 5-color single-molecule transcription imaging in eukaryotic cells at high resolution in time and space to capture promoter-enhancer interactions</li> <li>• Development of advanced fluorescence labeling strategies for the genome based on dCas9 (CAS-FISH)</li> <li>• Computational modeling and data analysis of 4D genome data</li> </ul> <p><b>Ph.D. Student</b> 2010 - 2016 Max Planck Institute for Biophysical Chemistry, Göttingen, Germany Department of NanoBiophotonics (Prof. Dr. Stefan Hell) <i>Dissertation title:</i> "4Pi-RESOLFT nanoscopy" <i>Advisor:</i> Prof. Dr. W. Stefan Hell</p> <ul style="list-style-type: none"> <li>• Design and construction of a 4Pi-RESOLFT nanoscope, including optical and acquisition system. Controlling software was also developed.</li> <li>• System / sample testing and optimization</li> </ul> <p><b>Master Student</b> 2009 Max Planck Institute of Biochemistry, Martinsried/Munich, Germany Department of Molecular Structural Biology (Prof. Dr. Wolfgang Baumeister)</p>	

*Dissertation title:* “Correlative microscopy at liquid nitrogen temperature”

*Advisors:* Dr. Jürgen M. Plitzko, Prof. Dr. Wolfgang Baumeister

- Development and testing of a cryo transfer shuttle (CryoStage<sup>2</sup>) for the reliable transfer of amorphous frozen-hydrated samples from a fluorescence to an electron microscope for correlative microscopy
- Further development and testing of the software based on scale-invariant feature transform (SIFT) for the correlative microscopy approach

**Undergraduate Researcher** - various research assistant positions 2005 - 2008

- Evaluation of the mechanical properties of actin filaments in combination with different actin binding proteins at the Physics Department of the Technical University of Munich, Germany - Prof Andreas Bausch (2008)
- Study of HEK cells with FLIC-microscopy at the Max Planck Institute of Biochemistry, Martinsried, Germany - Prof Peter Fromherz (2008)
- Analysis of Multi-SANS data (with MIRA) and data of Cytochrom C (with the Neutron Spin Echo RESEDA) at the Research Neutron Source Heinz Maier-Leibnitz (FRM II), Munich, Germany - Dr Robert Georgii and Prof Peter Böni (2007)
- Study of surfaces and DNA with an AFM at the Physics Department of the Technical University of Munich, Germany - Prof Thorsten Hugel (2006)
- Performance evaluation of an animal PET scanner at the university hospital “rechts der Isar”, Munich, Germany - Prof Sibylle Ziegler (2006)
- Data analysis of water levels of the Baltic Sea at the Leibnitz Institute for Baltic Sea Research, Warnemünde, Germany - Dr Torsten Seifert (2005)

## EDUCATION

**MicroMasters in Statistics and Data Science** 2020 - 2021

Massachusetts Institute of Technology / MITx, Cambridge, MA, USA

**Ph.D. in Physics** 2010 - 2015

Heidelberg University, Heidelberg, Germany

**Diploma in Physics** 2004 - 2009

Technical University of Munich, Munich, Germany

## HONORS & AWARDS

**Helmsley Fellowship**, Helmsley Charitable Trust 2017

**66th Lindau Nobel Laureate Meeting**, Participant 2016

**Excellence Award**, Max Planck Society 2010

**Oskar Karl Forster Scholarship**, Technical University of Munich 2009

**Study Career Scholarship**, Technical University of Munich 2008

## PUBLICATIONS

11. Nelson G.\*, **Boehm U.\*** et al., *QUAREP-LiMi: A community-driven initiative to establish guidelines for quality assessment and reproducibility for instruments and images in light microscopy*. arXiv, p1-17 (2021). doi:<https://arxiv.org/abs/2101.09153>
10. Galbraith J., Aaron J., **Boehm U.**, Chew T.-L. and Galbraith C., *Resolving the 3D Nano-architecture of the Actin Cytoskeleton*. Microscopy and Microanalysis, p1 (2020). doi:10.1017/S1431927620016736
9. Brown-Harding H., Cordelieres F., Poujol C., **Boehm U.**, Collinson L., *A ‘lockdown post’ from facility managers across the world*. FocalPlane, p1 (2020). doi:10.1242/focalplane.1244
8. **Boehm U.**, Hell S.W., Schmidt, R., *4Pi-RESOLFT nanoscopy*. Nature Comm. 7 (10504), p1-8 (2016). doi:10.1038/ncomms10504
7. **Boehm U.**, *4Pi-RESOLFT nanoscopy*. PhD Thesis, Heidelberg University (2016) doi: 10.11588/HEIDOK.00020200

6. **Boehm U.**, Schmidt R., Hell S.W., *Live cell 4pi nanoscopy*. European Biophysics Journal with Biophysics Letters 2015 Jul 1 (Vol. 44, pp. S75-S75). 233 SPRING ST, NEW YORK, NY 10013 USA: SPRINGER.
5. Ullal C.K., Primpke S., Schmidt R., **Boehm, U.**, Egner A., Vana P, Hell S.W., *Flexible Microdomain Specific Staining of Block Copolymers for 3D Optical Nanoscopy*. Macromolecules, 44, p7508–7510 (2011). doi: 10.1021/ma201504f
4. Ullal C., Schmidt R., **Boehm U.**, Primpke S., Vana P, Hell W.S., *STED Microscopy as a Characterization Tool for Three Dimensionally Nanostructured Block Copolymer Thin Films*. APS. 2011 Mar;2011:A43-002.
3. Rigort A., Bäuerlein F.J., Leis A., Gruska M., Hoffmann C., Laugks T., **Boehm U.**, Eibauer M., Gnaegi H., Baumeister W. and Plitzko J.M., *Micromachining tools and correlative approaches for cellular cryo-electron tomography*. J. Struct. Biol. 172, p169–179 (2010). doi: 10.1016/j.jsb.2010.02.011
2. Rigort A., Mathisen C., **Boehm U.**, Leis A., Lich B., Hayles M., Laugks T., Baumeister W. and Plitzko J.M., *Integrative Cryo-Correlative Microscopy Approaches*. Microscopy and Microanalysis. Vol 16(S2), p186–187 (2010). doi: 10.1017/S1431927610058216
1. **Boehm U.**, *Korrelative Mikroskopie bei Flüssigstickstoff-Temperatur*. Diploma Thesis, Technical University of Munich (2010)

\* these authors contributed equally to this work

PRESENTATIONS	<b>Junior Scientist Workshop on Biological Optical Microscopy</b> ( <i>invited</i> ), Janelia Research Campus, Ashburn, United States of America	2019
	<b>Transcription Seminar</b> ( <i>invited</i> ), Albert Einstein College of Medicine New York, United States of America	2019
	<b>Microscopy Seminar</b> ( <i>invited</i> ), Havard Medical School Boston, United States of America	2019
	<b>Microscopy Lunch Seminar</b> ( <i>invited</i> ), UMass Medical School Worcester, United States of America	2019
	<b>Single Biomolecules Meeting</b> , Cold Spring Harbor Laboratories Cold Spring Harbor, United States of America	2018
	<b>NIH Light Microscopy Interest Group Seminar</b> ( <i>invited</i> ), Bethesda, United States of America	2018
	<b>Chan Zuckerberg Initiative Imaging Workshop</b> ( <i>invited</i> ), CZ Biohub San Francisco, United States of America	2017
	<b>Chesapeake Bay Area Single Molecule Biology Meeting</b> , Baltimore, United States of America	2017
	<b>Frontiers in Imaging Science Conference</b> , Ashburn, United States of America	2017
	<b>Single Molecule Biophysics Conference</b> , Aspen, United States of America	2017
	<b>Labeling and Nanoscopy Conference</b> , Heidelberg, Germany	2016
	<b>MPiBpc Campus Seminar</b> ( <i>invited</i> ), Göttingen, Germany	2016
	<b>NCI Departmental Seminar</b> ( <i>invited</i> ), Bethesda, United States of America	2016
	<b>Departmental Seminar</b> ( <i>invited</i> ), Wyss Institute at Havard University,	2016

	Boston, United States of America	
	<b>Lunch Talk</b> ( <i>invited</i> ), Havard, Cambridge, United States of America	2016
	<b>Biophysical Society Annual Meeting</b> , Los Angeles, United States of America	2016
	<b>Seeing Is Believing Symposium</b> , Heidelberg, Germany	2015
	<b>Deutsche Physikerinnen Tagung</b> ( <i>invited</i> ), Göttingen, Germany	2015
	<b>Annual meeting of the European Light Microscopy Initiative (ELMI)</b> , Sitges, Spain	2015
	<b>Focus On Microscopy (FOM)</b> , Göttingen, Germany	2015
	<b>PROSPECTS. First Plenary Meeting</b> , Punta Negra, Majorca/Spain	2010
TEACHING	<b>Fiji Macros Programming</b> (virtual workshop)	2020
	Co-lead instructor, Janelia Research Campus, Ashburn, United States of America	
	<b>DECODE for Single Molecule Localization Microscopy</b> (virtual workshop) at the <i>From Image to Knowledge with ImageJ &amp; Friends</i> conference	2020
	Co-lead instructor, Janelia Research Campus, Ashburn, United States of America	
	<b>Image Analysis with ImageJ/Fiji</b> (virtual workshop)	2020
	Teaching assistant, National Institutes of Health, Bethesda, United States of America	
	<b>Open Science in Imaging and Microscopy</b> (breakout session during a workshop)	2019
	Lead instructor, Janelia Research Campus, Ashburn, United States of America	
	<b>Advanced Imaging Techniques in Biomedical Sciences</b> (summer intern journal club)	2018
	Lead instructor, National Institutes of Health, Bethesda, United States of America	
	<b>Introduction to microscopy</b> (graduate course)	2017
	Teaching assistant, University of Massachusetts Medical School, Worcester, United States of America	
	<b>Optical Microscopy &amp; Imaging in the Biomedical Sciences</b> (summer intern journal club)	2017
	Lead instructor, National Institutes of Health, Bethesda, United States of America	
	<b>Advanced physics laboratory course for physics students</b> (undergraduate course)	2011
	Teaching assistant, Heidelberg University, Germany	
	<b>Experimental Physics III: Optics</b> (undergraduate course)	2011
	Teaching assistant, University of Göttingen, Germany	
	<b>Experimental Physics IV: Quantum, atomic and molecular physics</b> (undergraduate course), Teaching assistant, University of Göttingen, Germany	2010
	<b>Theoretical Physics I: Theoretical Mechanics</b> (undergraduate course)	2009
	Teaching assistant, Technical University of Munich, Germany	
	<b>Theoretical Physics II: Electrodynamics</b> (undergraduate course)	2008
	Teaching assistant, Technical University of Munich, Germany	
MENTORING	<b>Janelia Buddy Program for International Scientists</b>	2020-present
	Focus: Facilitating the transition of international scientists to Janelia in partnership with Janelia's Human Resource Department	
	Janelia Research Campus, Ashburn, United States of America	
	<b>Mentoring of Postbac Students</b>	2020-present
	Focus: Navigating a scientific career	
	Janelia Research Campus, Ashburn, United States of America	
	<b>Mentoring of PhD, College and Highschool Students</b>	2017-2018

	Focus: Navigating a scientific career, how to work in an optics laboratory & in-depth support with individual research projects National Institutes of Health, Bethesda, United States of America	
	<b>Mentoring of PhD students and Master Students</b>	2010-2016
	Focus: Navigating a scientific career, how to work in an optics laboratory & in-depth support with individual research projects Max Planck Institute for Biophysical Chemistry, Göttingen, Germany	
CONFERENCE ORGANIZATION	<b>Microscopy Club for North America</b> , Co-organizer Ashburn, United States of America	2021 - present
	<b>Janelia &amp; EMBL Optical Interest Group Seminar Series</b> , Co-organizer Ashburn, United States of America	2020 - present
	<b>Virtual Optical Interest Group (OIG) Seminar Series</b> , Co-organizer Virtual seminar series with external speakers via Zoom during the COVID-19 lockdown Ashburn, United States of America	2020
	<b>Imaging Africa Microscopy Club</b> , Webinar support Ashburn, United States of America	2020
	<b>Frontiers in Imaging Science Conference</b> , Member of the local support team Ashburn, United States of America	2019
	<b>Labeling and Nanoscopy Conference 2018</b> , Website and social media support Heidelberg, Germany	2018
	<b>Division of International Services (DIS) Immigration Symposium</b> , Co-organizer National Institutes of Health, Bethesda, United States of America	2018
	<b>International Opportunities EXPO</b> , Co-organizer National Institutes of Health, Bethesda, United States of America	2018
	<b>Division of International Services (DIS) Immigration Symposium</b> , Co-organizer National Institutes of Health, Bethesda, United States of America	2017
	<b>I, Scientist Conference</b> , Co-organizer Berlin, Germany	2017
	<b>Labeling and Nanoscopy Conference 2016</b> , Co-organizer Heidelberg, Germany	2016
	<b>Focus On Microscopy (FOM)</b> , Social media support	2015 - present
	<b>PhDnet General Meeting</b> , Co-organizer Bonn, Germany	2011
PEER REVIEW	<b>Angewandte Chemie (International ed.)</b> , <b>Biophysical Journal</b> , <b>Journal of Microscopy</b>	
PROFESSIONAL SERVICES	<b>QUAREP-LiMi</b> , Chair of the "White Paper" working group Freiburg, Germany	2020 - present
	<b>Frontiers in Bioinformatics</b> , Review Editor for Computational BioImaging Lausanne, Switzerland	2020 - present
	<b>CZI Imaging Scientists Round 2</b> , Grant reviewer San Francisco, United States of America	2020
	<b>QUAREP-LiMi</b> , Vice-chair of the "Image Quality" working group Freiburg, Germany	2020 - present
	<b>German BioImaging</b> , Committee member of the working groups for (1) Training and Knowledge Transfer and	2020 - present

(2) Image Data Analysis & Management

<b>BioImaging North America (BINA)</b> , Committee member of the "Quality Control and Data Management" working group	2020 - present
<b>Janelia's Optical Interest Group (OIG)</b> , Co-coordinator Ashburn, Virginia, United States of America	2020 - present
<b>GSO German Scholars Organization e.V.</b> , Coordinator for Local Chapter of German Scientists, Ashburn	2020 - present
<b>Accelerating Science and Publication in Biology (ASAPbio)</b> , Ambassador	2018 - present
<b>eLife Early-Career Advisory Group</b> , Ambassador	2017 - 2019
<b>NIH Laser Safety Advisory Committee</b> , Committee member for the NCI National Institutes of Health, Bethesda, United States of America	2018
<b>NIH Visiting Fellows Committee</b> , Co-chair National Institutes of Health, Bethesda, United States of America	2017 - 2018
<b>NIH Light Microscopy Interest Group</b> , Co-coordinator National Institutes of Health, Bethesda, United States of America	2016 - present
<b>DPG Arbeitskreis für Challengengleichheit</b> , Board member Bad Honnef, Germany	2016 - present
<b>Lindau Nobel Laureate Meeting</b> , Freelance writer Lindau, Germany	2016 - present
<b>66th Lindau Nobel Laureate Meeting</b> , "Women in Science"-correspondent Lindau, Germany	2016
<b>Lise Meitner Gesellschaft e.V.</b> , Co-founder and board member Berlin, Germany	2011
<b>Max Planck PhDnet</b> , Steering group 2011 member & deputy spokesperson Max Planck Society, Munich, Germany	2011
<b>PhD/Postdoc Community</b> , PhD/Postdoc representative Max Planck Institute for Biophysical Chemistry, Göttingen, Germany	2011 - 2014

CERTIFICATES &  
TRAINING

<b>Data Analysis for Social Scientists</b> A 11-week course by MITx to learn methods for harnessing and analyzing data to answer questions of cultural, social, economic, and policy interest.	2020
<b>Probability - The Science of Uncertainty and Data</b> A 16-week course by MITx to build foundational knowledge of data science with an introduction to probabilistic models, including random processes and the basic elements of statistical inference.	2020
<b>Fierce Conversations program</b> A 6-week course offered by Howard Hughes Medical Institute about Feedback, Confrontation, Team, Delegation, Coaching and Accountability.	2020
<b>LabVIEW Core 2</b> A certificate course offered by National Instruments about the LabVIEW basics.	2020
<b>LabVIEW Core 1</b> A certificate course offered by National Instruments about the LabVIEW basics.	2020
<b>HBS Entrepreneurship Essentials</b> Entrepreneurship Essentials is a 4-week, 30-hour online certificate program from Harvard Business School. Entrepreneurship Essentials introduces participants to the entrepreneurial journey from finding an idea to gaining traction in the marketplace to raising	2020

capital for a venture. Participants learn an overarching framework - People, Opportunity, Context, Deal - to evaluate opportunities, manage start-ups, and finance ventures.

**HBS Management Essentials** 2019

Management Essentials is an 8-week, 35-hour online certificate program from Harvard Business School. Management Essentials takes a distinctive, hands-on approach to management. Participants in this course learn to identify, understand, design, and shape critical organizational and managerial processes as a means of getting the work done.

**HBS CORE (Credential of Readiness)** 2019

CORE (Credential of Readiness) is a 150-hour certificate program on the fundamentals of business from Harvard Business School. CORE is comprised of three courses - Business Analytics, Economics for Managers, and Financial Accounting - developed by leading Harvard Business School faculty and delivered in an active learning environment based on the HBS signature case-based learning model.

**Scientists Teaching Science** 2018

at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America (9-week online pedagogy course)

**Research Mentor Training** 2018

at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America

**Business of Science for Scientists** 2018

by SciPhD at the National Cancer Institute in Shady Grove, United States of America

**Chromatin, Epigenetics and Gene Expression Course** 2018

at the Cold Spring Harbor Laboratory (CSHL) in Cold Spring Harbor, NY, United States of America, Course instructors: Prof Karen Adelman, Dr Luciano Di Croce, Prof Geeta Narlikar, Prof Ali Shilatifard

**BioTech2: Recombinant DNA Methodology** 2017

at the Foundation for Advanced Education in the Sciences at the NIH (FAES), Bethesda, United States of America

**Management Bootcamp for Postdocs** 2017

at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America

**Ethics in Research Training for Postdocs** 2017

at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America

**Workplace Dynamic Series** 2016

about Self-Awareness, Conflict & Feedback, Team Skills, Diversity In A Multicultural Society at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America

COMPUTER SKILLS Languages: Python, MATLAB, LabVIEW, C++, R  
Software: Inventor (CAD)

PROFESSIONAL AFFILIATION American Physical Society, German Physical Society, BioImaging North America (BINA), German BioImaging Society, Network of European BioImage Analyst (NEUBIAS), Quantitative BioImaging Society

LANGUAGES German - native language  
English - fluent, spoken and written  
French - basic knowledge

Swedish - basic knowledge  
Spanish - basic knowledge

#### REFERENCES

Available upon request

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