

# Program

## Wednesday, 03.01.2018

18:00 **Registration desk open** – Georg August University Göttingen, Faculty of Physics, conference site

19:00 **QBI Society Meeting**, Hörsaal 2

*Session Chair: Raimund Ober*

## Thursday, 04.01.2018

**Conference Opening (8:45 - 9:00), Hörsaal 1**

8:45 **Welcome address by Jörg Enderlein & Raimund Ober**

**Super-resolution (9:00 - 10:40), Hörsaal 1**

*Session Chair: Jörg Enderlein*

9:00 **Stefan Hell (Keynote Lecture)**, *Max Planck Institute for Biophysical Chemistry, Göttingen, Germany*  
A MINimum for Maximum Resolution [ABSTRACT # A]

9:50 **Alberto Diaspro (Invited Speaker)**, *Italian Institute of Technology, Genoa, Italy*  
Liquid Tunable Microscopy [ABSTRACT # B]

10:20 **Kevin Vynck**, *CNRS - IOGS - Univ. Bordeaux, Talence, France*  
Propagation Of Polarized Light In Turbid Media: Challenges And New Perspectives [ABSTRACT # 105]

**Coffee Break (10:40 - 11:10)**

**DNA and Super-resolution (11:10-12:40), Hörsaal 1**

*Session Chair: Alberto Diaspro*

11:10 **Yuval Ebanstein (Invited Speaker)**, *Tel Aviv University, Tel Aviv, Israel*  
Super-Resolution Tracking of Molecular Motors and DNA in Nanochannel Arrays [ABSTRACT # C]

11:40 **Ralf Jungmann (Invited Speaker)**, *LMU Munich and Max Planck Institute of Biochemistry, Martinsried near Munich, Germany*  
Super-Resolution Imaging with DNA Molecules [ABSTRACT # D]

## Lunch (12:10 - 13:40)

### Parallel Sessions

#### Analytical Techniques for Single Molecules I (13:40 - 15:00), Hörsaal 1

Session Chair: Sebastian Kruss

- 13:40 **Stefan Niekamp**, UCSF/HHMI, San Francisco, United States  
Multi-color high-resolution localization microscopy methods enable nanometer distance measurements [ABSTRACT # 42]
- 14:00 **Jonas Ries**, EMBL, Heidelberg, Germany  
Fast, robust and precise 3D localization for arbitrary point spread functions [ABSTRACT # 13]
- 14:20 **Petar Petrov**, Stanford University, Stanford, United States  
Modeling engineered point spread functions for 3D single-molecule localization microscopy [ABSTRACT # 20]
- 14:40 **Amin Zehtabian**, Freie Universität Berlin, Berlin, Germany  
Adaptive enhancement of microtubule filaments in SMLM images using nonlinear partial differential equations and genetic algorithms [ABSTRACT # 87]

#### Fluorescence Correlation Spectroscopy and Diffusion Techniques (13:40 - 15:00), Hörsaal 2

Session Chair: Ingo Gregor

- 13:40 **Falk Schneider**, University of Oxford, Oxford, United Kingdom  
Statistical analysis of scanning FCS data differentiates free from hindered diffusion [ABSTRACT # 64]
- 14:00 **Antoine Delon**, Université Grenoble Alpes, Grenoble, France  
Fluorescence correlation spectroscopy through micro-beads: a minimal model to study the impact of a cellular layer [ABSTRACT # 103]
- 14:20 **Mariano Gonzalez Pisfil**, PicoQuant GmbH - Humboldt-Universität zu Berlin, Berlin, Germany  
Multi-species diffusion in membrane utilizing scanning FCS and super-resolution microscopy [ABSTRACT # 79]
- 14:40 **Quan Wang**, Princeton University, Princeton, United States  
Single-molecule diffusometry in a feedback trap [ABSTRACT # 9]

## Coffee Break and Poster Session (15:00 - 16:30)

Coffee break sponsored by **Chroma**

- 16:10-16:25 **Marketing Presentation, Hörsaal 1: Marcelle Koenig**, PicoQuant GmbH, Berlin, Germany  
Quantitative Ultrafast FLIM [ABSTRACT # 6]

### Parallel Sessions

## Single Molecule Clustering and Colocalization (16:30 - 18:10), Hörsaal 1

Session Chair: Peter Dedecker

- 16:30 **Adela Staszowska**, King's College London, London, United Kingdom  
The Renyi divergence allows precise and accurate cluster radius measurement for localization microscopy [ABSTRACT # 22]
- 16:50 **Iain Styles**, University of Birmingham, Birmingham, United Kingdom  
Persistent homology as a tool to probe structure in single molecule microscopy datasets [ABSTRACT # 46]
- 17:10 **Andreas Arnold**, TU Wien, Wien, Austria  
Temporal accumulation analysis allows detection of small protein oligomers in the plasma membrane [ABSTRACT # 76]
- 17:30 **Charles Kervrann**, Inria, Rennes, France  
GcoPS: a geo-copositionning system for live cell imaging and superresolution microscopy [ABSTRACT # 50]
- 17:50 **Florian Levot**, INSERM, Bordeaux, France  
Polygon-based colocalization analysis for multicolor single-molecule localization microscopy data [ABSTRACT # 61]

## Instrumental Advances for Cell Imaging (16:30 - 18:10), Hörsaal 2

Session Chair: Thomas Jovin

- 16:30 **Ed Cohen**, Imperial College London, London, United Kingdom  
Spatial Statistics and Resolution [ABSTRACT # 111]
- 16:50 **Ingo Gregor**, Georg-August-University, Göttingen, Germany  
Rapid non-linear image scanning microscopy [ABSTRACT # 60]
- 17:10 **Elias M. Puchner**, University of Minnesota, Twin Cities, Minneapolis, United States  
Quantitative and motion-corrected super-resolution imaging of intracellular organelles in living cells [ABSTRACT # 107]
- 17:30 **Verena Richter**, Aalen University, Aalen, Germany  
Axial tomography in single cell fluorescence microscopy [ABSTRACT # 12]
- 17:50 **Bassam Hajj**, Institut Curie - CNRS, Paris, France  
Volumetric dual color microscopy for 3D imaging of densely labeled cellular structures [ABSTRACT # 24]

## Poster Session with Beer & Pretzel (18:30 - 22:00)

19:30-20:30 **Plenary Discussion, Hörsaal 1**: Calibration of microscopy instruments

Organizer: David Grunwald

# Friday, 05.01.2018

## Advanced Imaging and Super-resolution (9:00 - 10:40), Hörsaal 1

Session Chair: Raimund Ober

- 9:00 **Philip Tinnefeld (Keynote Lecture)**, Technische Universität Braunschweig, Braunschweig, Germany  
Reference Structures for Quantitative Microscopy [ABSTRACT # E]
- 9:50 **Matthias Weiss (Invited Speaker)**, University of Bayreuth, Bayreuth, Germany  
Monitoring Self-Organization Events in the Early Embryogenesis of *Caenorhabditis elegans* with Light Sheet Microscopy [ABSTRACT # G]
- 10:20 **Hidreza Heydarian (2017 Poster Award Winner)**, Delft University of Technology, Delft, The Netherlands  
Template-free 2D-particle fusion of localization microscopy images produces  $\lambda/150$  resolution [ABSTRACT # 19]

## Coffee Break (10:40 - 11:10)

Coffee break sponsored by the Allen Institute for Cell Science

## Quantitation in Cell Biology and Membranes (11:10 - 12:40), Hörsaal 1

Session Chair: Yuval Ebenstein

- 11:10 **Yuval Garini (Invited Speaker)**, Bar Ilan University, Ramat Gan, Israel  
Studying Chromatin Dynamics by Advanced Live Cell Imaging Methods [ABSTRACT # H]
- 11:40 **Martin Hof (Invited Speaker)**, Czech Academy of Sciences, Prague, Czech Republic  
Lipid Driven Nano-Domains are Fluid [ABSTRACT # I]
- 12:10 **Alexander Rohrbach (Invited Speaker)**, University of Freiburg, Freiburg, Germany  
Label-Free Imaging of Cellular Dynamics at 100 Hz and 140 nm Resolution [ABSTRACT # J]

## Lunch (12:40 - 13:40)

## Parallel Sessions

## Minisymposium: Software Design for Quantitative Microscopy Image Analysis (13:40 - 15:00), Hörsaal 1

Session Chair: Raimund Ober

- 13:40 **Winfried Wiegand**, Allen Institute for Cell Science, Seattle, United States  
Quantitative microscopy pipeline for building a model of the human cell [ABSTRACT # 118]
- 14:00 **Jerry Chao**, Texas A&M University, College Station, United States  
A software framework for advanced microscopy data analysis with application to single molecule microscopy [ABSTRACT # 112]

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14:20 **Jens Rittscher**, [Oxford University, Oxford, United Kingdom](#)  
Microscopy software support on websites, [ABSTRACT # 108]

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14:40 **Mark Tsuchida**, [Open Imaging, Inc., San Francisco, United States](#)  
Design approaches to micromanager [ABSTRACT # 109]

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### Single Molecule Application (13:40 - 15:00), Hörsaal 2

*Session Chair: Yuval Garini*

13:40 **Steffen J. Sahl**, [MPI for Biophysical Chemistry, Göttingen, Germany](#)  
Fluorescence nanoscopy of aggregation-prone mutant Huntingtin proteins: recent advances [ABSTRACT # 85]

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14:00 **Andreas Gahlmann**, [University of Virginia, Charlottesville, United States](#)  
3D single-molecule tracking of confined diffusers: resolving cytosolic complex formation in living bacterial cells [ABSTRACT # 7]

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14:20 **Daniel Thédié**, [Université de Grenoble Alpes, CNRS, CEA, Grenoble, France](#)  
Photoswitching of green MEOS2 by intense 561nm light perturbs efficient green-to-red photoconversion in quantitative localization microscopy [ABSTRACT # 104]

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14:40 **Stephan Bergmann**, [Bielefeld University, Bielefeld, Germany](#)  
Photoactivation localization microscopy of cardiomyopathy associated plakophilin-2 mutants [ABSTRACT # 17]

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### Coffee Break and Poster Session (15:00 - 16:20)

16:00 – 16:15 **Marketing Presentation, Hörsaal 1: Kirti Prakash**, [Oxford NanoImaging, Oxford, United Kingdom](#)  
Meet the nanoimager: the next generation of single-molecule and superresolution imaging

### Parallel Sessions

### Analysis of Microscopy and Cell Biological Data Using Machine Learning and Other Techniques (16:20 - 18:20), Hörsaal 1

*Session Chair: Ed Cohen*

16:20 **Christopher Calderon**, [Ursa Analytics, Denver, United States](#)  
Using deep convolutional neural networks to circumvent morphological feature specification when classifying subvisible protein aggregates from micro-flow images [ABSTRACT # 54]

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16:40 **Matthias Häring**, [Max-Planck-Institute for Dynamics and Self-Organization, Göttingen, Germany](#)  
Segmentation of low-quality biomedical images using deep convolution networks [ABSTRACT # 88]

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17:00 **Benedict Diederich**, [IPHT Leibniz Institute of Photonic Technology's, Jena, Germany](#)  
Machine learning to reconstruct 3D scattering data from partially coherent imaging data [ABSTRACT # 93]

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17:20 **Felipe Delestro**, [ENS, Paris, France](#)

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High density tracking of soma activity in 3D confocal images *in vivo* [ABSTRACT # 36]

17:40 **Daniel Wüstner**, [University of Southern Denmark, Odense, Denmark](#)  
Computational analysis of fluorescence loss in photobleaching (FLIP) experiments [ABSTRACT # 8]

18:00 **Zoltan Cseresnyes**, [HKI, Jena, Germany](#)  
Quantitative image analysis of label-free cells [ABSTRACT # 56]

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## Imaging of Cell Biological Phenomena Using Different Imaging Techniques (16:20 - 18:20), Hörsaal 2

*Session Chair: Ralph Jungmann*

16:20 **Chiara Gramaccioni**, [Univ. of Cosenza, Arcavata di Rende, Italy](#)  
Nanotomography and X-ray fluorescence microscopy for quantitative Iron concentration map in inflamed cells [ABSTRACT # 11]

16:40 **Maximilian Gorelashvili**, [University Hospital Würzburg, Würzburg, Germany](#)  
Light sheet fluorescence microscopy (LSFM) based quantitative structural analysis of megakaryocytes in intact murine bone [ABSTRACT # 86]

17:00 **Sebastian Kruss**, [Göttingen University, Göttingen, Germany](#)  
Near infrared chemical imaging of small molecules [ABSTRACT # 25]

17:20 **Michael Müller**, [Universitätsmedizin Göttingen, Göttingen, Germany](#)  
Quantitative imaging of subcellular redox-dynamics in complex preparations [ABSTRACT # 71]

17:40 **Eva Kreysing**, [FZ Juelich, Juelich, Germany](#)  
Quantitative measurement of action-potential-induced dynamics at the cell-substrate interface using Surface Plasmon Resonance microscopy [ABSTRACT # 51]

18:00 **Dirk-Peter Herten**, [Universität Heidelberg, Heidelberg, Germany](#)  
From Super-Resolution to Quantitative Microscopy [ABSTRACT # 95]

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## Conference dinner (18:30-22:00)

Max Planck Institute for Solar System Research (foyer)  
Justus-von-Liebig-Weg 3  
37077 Göttingen

# Saturday, 06.01.2018

## X-Ray and Advanced Microscopy (9:00 - 10:40), Hörsaal 1

Session Chair: Martin Hof

- 9:00 **Theo Lasser (Keynote Lecture)**, *École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*  
VOIR fait SAVOIR [ABSTRACT # K]
- 9:50 **Ana Diaz (Invited Speaker)**, *Paul Scherrer Institut, Villigen, Switzerland*  
Three-Dimensional Absolute Density Mapping of Biological Matter on the Nanoscale with Coherent X-rays [ABSTRACT # L]
- 10:20 **Thomas Jovin**, *Max Planck Institute for Biophysical Chemistry, Göttingen, Germany*  
Adjustable Enhanced ("super") Resolution With A Multiaperture, Rapid Optical-sectioning Fluorescence Microscopy Module ("iPAM") [ABSTRACT # 10]

## Coffee Break (10:40 - 11:10)

## High Speed Imaging, Single Molecule Imaging and Super-resolution (11:10 - 12:40), Hörsaal 1

Session Chair: Theo Lasser

- 11:10 **Hari Shroff (Invited Speaker)**, *National Institute of Biomedical Imaging and Bioengineering, Bethesda, Maryland, United States*  
High Speed Imaging At And Beyond The Diffraction Limit [ABSTRACT # M]
- 11:40 **Philipp Kukura (Invited Speaker)**, *University of Oxford, Oxford, United Kingdom*  
Single Molecule Imaging Mass Spectrometry in Solution [ABSTRACT # N]
- 12:10 **Peter Dedecker (Invited Speaker)**, *University of Leuven, Leuven, Belgium*  
Sub-diffraction imaging of cellular biosensors [ABSTRACT # O]

## Lunch (12:40 - 13:40)

## Parallel Sessions

## Minisymposium: Digital Microscopy and Image Informatics (13:40 - 15:20), Hörsaal 1

Session Chair: Sripad Ram

- 13:40 **Sripad Ram**, *Pfizer, Inc, San Diego, United States*  
Advanced Image Analytics For Characterizing The Type And Distribution Of Immune Cells In The Tumor Microenvironment [ABSTRACT # 102]
- 14:00 **Yinyin Yuan**, *Institute for Cancer Research, United Kingdom*  
Deciphering the tumor ecosystem with histology image analysis [ABSTRACT # 99]
- 14:20 **Nasir Rajpoot**, *University of Warwick, Coventry, United Kingdom*  
Mining for histology footprints of cancer subtypes [ABSTRACT # 97]

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14:40 **Lars Pedersen**, *Visiopharm, Denmark*  
Advanced virtual multiplexing [ABSTRACT # 98]

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15:00 **France Rose**, *Institut de Biologie de l'École Normale Supérieure (IBENS), Paris, France*  
Quantifying the spatial heterogeneity of cell responses to cancer drugs [ABSTRACT # 72]

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### Experimental Techniques for Single Molecule Microscopy (13:40 - 15:20), Hörsaal 2

*Session Chair: Philipp Kukura*

13:40 **Kristýna Holanová**, *Institute of Photonics and Electronics of the AS CR, v. v. i, Prague, Czech Republic*  
High-fidelity fast tracking of protein motion [ABSTRACT # 33]

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14:00 **Kyle Douglass**, *EPFL, Lausanne, Switzerland*  
Autonomous and adaptive illumination for the real-time control of fluorescence photodynamics [ABSTRACT # 32]

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14:20 **Christiaan Hulleman**, *Delft University of Technology, Delft, The Netherlands*  
Generating linearly polarized light in epifluorescence microscopes for cryogenic super-resolution [ABSTRACT # 37]

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14:40 **Keith Lidke**, *University of New Mexico, Albuquerque, United States*  
Multi-structure super-resolution imaging using sequential imaging and DNA strand displacement [ABSTRACT # 55]

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15:00 **Roman Tsukanov**, *Universität Göttingen, Göttingen, Germany*  
Nanometer axial colocalization of single emitters using metal-induced energy transfer [ABSTRACT # 49]

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### Coffee Break and Poster Session (15:20 - 16:50)

#### Parallel Sessions

### Single Molecule Microscopy in Applications and Super-resolution (16:50 - 18:10), Hörsaal 1

*Session Chair: Jörg Enderlein*

16:50 **Eyal Nir**, *Beer Sheva University, Beer Sheva, Israel*  
Imaging a computer controlled fast and processive DNA bipedal walker [ABSTRACT # 48]

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17:10 **Sebastian Isbaner**, *Georg-August-University, Göttingen, Germany*  
Superresolution upgrade for confocal spinning disk systems [ABSTRACT # 14]

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17:30 **Diane Lidke**, *University of New Mexico, Albuquerque, United States*  
Optimized single molecule pull-down (SiMPull) reveals heterogeneity in EGFR phosphorylation [ABSTRACT # 43]

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17:50 **Yoav Shechtman**, *Technion, Israel Institute of Technology, Haifa, Israel*  
Three-dimensional tracking of DNA loci in living cells using a large-depth range Tetrapod point-spread-function [ABSTRACT # 119]

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## Analytical Techniques for Single Molecule Microscopy II (16:50 - 18:10), Hörsaal 2

Session Chair: Hari Shroff

- 16:50 **Daniel Nino**, *University of Toronto, Toronto, Canada*  
Molecular counting from fluorophore blinking statistics [ABSTRACT # 5]
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- 17:10 **Zach Marin**, *University of Auckland, Auckland, New Zealand*  
Simulating (F)PALM/(d)STORM data based on measured photokinetic properties [ABSTRACT # 40]
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- 17:30 **Johannes Hohlbein**, *Wageningen University and Research, Wageningen, The Netherlands*  
Phasor based single-molecule localization microscopy in 3D (PSMLM-3D): an algorithm for MHz localization rates using standard CPUs [ABSTRACT # 89]
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- 17:50 **Rasmus Thorsen**, *TU Delft, Delft, The Netherlands*  
Photons count underestimation in single molecule imaging [ABSTRACT # 58]
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## Conference Closing (18:10 – 18:30), Hörsaal 1

- 18:10 **Conference Closing** by **Raimund Ober & Jörg Enderlein**  
Best Poster Prize QBI 2018 Announcement

**Social gatherings in restaurants** (18:30 - ... )