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 MIINimum 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 Ebenstein (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]
<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Institution</th>
<th>Location</th>
<th>Title</th>
<th>Abstract ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:10</td>
<td>Philip Tinnefeld (Invited Speaker)</td>
<td>Technische Universität Braunschweig, Braunschweig, Germany</td>
<td></td>
<td>Reference Structures for Quantitative Microscopy</td>
<td>E</td>
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<tr>
<td>Lunch</td>
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<tr>
<td>13:40</td>
<td>Stefan Niekamp, UCSF/HHMI, San Francisco, United States</td>
<td></td>
<td>Hörsaal 1</td>
<td>Multi-color high-resolution localization microscopy methods enable nanometer distance measurements</td>
<td>42</td>
</tr>
<tr>
<td>14:00</td>
<td>Jonas Ries, EMBL, Heidelberg, Germany</td>
<td></td>
<td></td>
<td>Fast, robust and precise 3D localization for arbitrary point spread functions</td>
<td>13</td>
</tr>
<tr>
<td>14:20</td>
<td>Petar Petrov, Stanford University, Stanford, United States</td>
<td></td>
<td></td>
<td>Modeling engineered point spread functions for 3D single-molecule localization microscopy</td>
<td>20</td>
</tr>
<tr>
<td>14:40</td>
<td>Amin Zehtabian, Freie Universität Berlin, Berlin, Germany</td>
<td></td>
<td></td>
<td>Adaptive enhancement of microtubule filaments in SMLM images using nonlinear partial differential equations and genetic algorithms</td>
<td>87</td>
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<tr>
<td>13:40</td>
<td>Falk Schneider, University of Oxford, Oxford, United Kingdom</td>
<td></td>
<td>Hörsaal 2</td>
<td>Statistical analysis of scanning FCS data differentiates free from hindered diffusion</td>
<td>64</td>
</tr>
<tr>
<td>14:00</td>
<td>Antoine Delon, Université Grenoble Alpes, Grenoble, France</td>
<td></td>
<td></td>
<td>Fluorescence correlation spectroscopy through micro-beads: a minimal model to study the impact of a cellular layer</td>
<td>103</td>
</tr>
<tr>
<td>14:20</td>
<td>Mariano Gonzalez Pisfil, PicoQuant GmbH - Humboldt-Universität zu Berlin, Berlin, Germany</td>
<td></td>
<td></td>
<td>Multi-species diffusion in membrane utilizing scanning FCS and super-resolution microscopy</td>
<td>79</td>
</tr>
<tr>
<td>14:40</td>
<td>Quan Wang, Princeton University, Princeton, United States</td>
<td></td>
<td></td>
<td>Single-molecule diffusometry in a feedback trap</td>
<td>9</td>
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<tr>
<td>Coffee Break and Poster Session</td>
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<tr>
<td>16:10-16:25</td>
<td>Marketing Presentation: Marcelle Koenig, PicoQuant GmbH, Berlin, Germany</td>
<td></td>
<td></td>
<td>Quantitative Ultrafast FLIM</td>
<td>6</td>
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</tbody>
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### Parallel Sessions

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

*Session Chair: Peter Dedecker*

<table>
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<tr>
<th>Time</th>
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<th>Topic</th>
<th>Abstract #</th>
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<tbody>
<tr>
<td>16:30</td>
<td>Adela Staszowska</td>
<td>King's College London, London, United Kingdom</td>
<td>The Renyi divergence allows precise and accurate cluster radius measurement for localization microscopy</td>
<td>ABSTRACT #22</td>
</tr>
<tr>
<td>16:50</td>
<td>Jeremy Pike</td>
<td>University of Birmingham, Birmingham, United Kingdom</td>
<td>Persistent homology as a tool to probe structure in single molecule microscopy datasets</td>
<td>ABSTRACT #46</td>
</tr>
<tr>
<td>17:10</td>
<td>Andreas Arnold</td>
<td>TU Wien, Wien, Austria</td>
<td>Temporal accumulation analysis allows detection of small protein oligomers in the plasma membrane</td>
<td>ABSTRACT #76</td>
</tr>
<tr>
<td>17:30</td>
<td>Charles Kervrann</td>
<td>Inria, Rennes, France</td>
<td>GcoPS: a geo-copositionning system for live cell imaging and superresolution microscopy</td>
<td>ABSTRACT #50</td>
</tr>
<tr>
<td>17:50</td>
<td>Florian Levet</td>
<td>INSERM, Bordeaux, France</td>
<td>Polygon-based colocalization analysis for multicolor single-molecule localization microscopy data</td>
<td>ABSTRACT #61</td>
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#### Instrumental Advances for Cell Imaging (16:30 - 18:10), Hörsaal 2

*Session Chair: Thomas Jovin*

<table>
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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Institution</th>
<th>Topic</th>
<th>Abstract #</th>
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<tbody>
<tr>
<td>16:30</td>
<td>Ed Cohen</td>
<td>Imperial College London, London, United Kingdom</td>
<td>Spatial Statistics and Resolution</td>
<td>ABSTRACT #111</td>
</tr>
<tr>
<td>16:50</td>
<td>Ingo Gregor</td>
<td>Georg-August-University, Göttingen, Germany</td>
<td>Rapid non-linear image scanning microscopy</td>
<td>ABSTRACT #60</td>
</tr>
<tr>
<td>17:10</td>
<td>Sebastian Isbaner</td>
<td>Georg-August-University, Göttingen, Germany</td>
<td>Superresolution upgrade for confocal spinning disk systems</td>
<td>ABSTRACT #14</td>
</tr>
<tr>
<td>17:30</td>
<td>Verena Richter</td>
<td>Aalen University, Germany</td>
<td>Axial tomography in single cell fluorescence microscopy</td>
<td>ABSTRACT #12</td>
</tr>
<tr>
<td>17:50</td>
<td>Bassam Hajj</td>
<td>Institut Curie - CNRS, Paris, France</td>
<td>Selective volumetric excitation and dual color microscopy for 3D imaging of densely labeled cellular structures</td>
<td>ABSTRACT #24</td>
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</tbody>
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### Poster Session with Beer & Pretzel (18:30 - 22:00)

**Plenary Discussion:** Calibration of microscopy instruments

*Organizer: David Grunwald*
## Advanced Imaging and Super-resolution (9:00 - 10:40), Hörsaal 1
*Session Chair: Raimund Ober*

**9:00**  
Paul French (Keynote Lecture), Imperial College London, London, United Kingdom  
Multidimensional Fluorescence Imaging from High Content Analysis to Preclinical and Clinical Application [ABSTRACT # F]

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

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

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 Huntington proteins: recent advances [ABSTRACT # 85]

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]

14:20  Dominique Bourgeois, 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]

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

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

16:00 – 16:15 Marketing Presentation: Oxford NanolImaging

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]

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]

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]

17:20  Felipe Delestro, ENS, Paris, France
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]

**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]

**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*

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<th>Time</th>
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| 9:00   | Theo Lasser *(Keynote Lecture)*, École Polytechnique Fédérative 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 ("IP") [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*

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<tr>
<th>Time</th>
<th>Speaker/Topic</th>
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| 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 Warwick, Coventry, United Kingdom  
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*

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<th>Time</th>
<th>Speaker/Topic</th>
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| 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] |
14:40 Lars Pedersen, Visiopharm, Denmark
Advanced virtual multiplexing [ABSTRACT # 98]

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

**Experimental Techniques for Single Molecule Microscopy (13:40 - 15:20), Hörsaal 2**
*Session Chair: Jörg Enderlein*

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]

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

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

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]

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

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

**Parallel Sessions**

**Single Molecule Microscopy in Applications (16:50 - 18:10), Hörsaal 1**
*Session Chair: Philipp Kukura*

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

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

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

**Session Chair:** Hari Shroff

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

- **18:10** Conference Closing by Raimund Ober & Jörg Enderlein

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