

11th Single Molecule Localization Microscopy Symposium

Monday 29th August – Wednesday 31st 2022

Institut Langevin, 1 rue Jussieu, 75005 Paris



Program

Organizers : Sandrine Lévêque-Fort, Guillaume Dupuis, Ignacio Izeddin and Emmanuel Fort

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Institut Langevin, 1 rue Jussieu, 75005 Paris

Monday 29th August

13h00 Registration

13h30-14h00 Welcome to SMLMS 2022

Session 1 : Chair Jean Baptiste Sibarita

14h00-14h30 Invited : **“Imaging of proteins’ organization in 3D using Single Molecule Orientation and Localization Microscopy (SMOLM)”** Sophie Brasselet

14h30-15h Invited : **“Nanoscale cellular architecture with 4Pi-STORM”** Mark Bates

15h00-15h15 Selected abstract 1 : **“Measuring three dimensional single molecule orientation via ratiometric 4-polarization projection microscopy”** Miguel Sison

15h15-15h30 Selected abstract 2 : **“High-fidelity 3D live-cell nanoscopy through data-driven enhanced super-resolution radial fluctuation”** Hannah S. Heil

15h30-15h45 Selected abstract 3 : **“Time shifting interferences for improved localization precision”** Abigail Illand

15h45-16h15 coffee break

Session 2 : Chair Mike Heilemann

16h15-16h45 Invited : **“Unusual PAINT”** Lorenzo Albertazzi

16h45-17h00 Selected abstract 4 : **“Bioorthogonal Click Chemistry Enables Site-specific Fluorescence Labeling for Quantitative Super-Resolution Imaging”** Gerti Berliu

17h00-17h15 Selected abstract 5 : **Pushing the limits of dSTORM imaging with long-lived buffers”** Karine Monier

17h15-17h30 Selected abstract 6 : **“Photoconvertible and Photoswitchable Targeted Fluorescent Probes Based on Directed Photooxidation for Live SMLM Imaging”** Mayeul Collot

17h30-17h45 short break – poster installation

Session 3 : Chair Sandrine Lévêque-Fort

17h45-18h45 **Keynote : “Molecular resolution fluorescence imaging”** Markus Sauer

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18h45-22h poster session/welcome reception (18h45-19h45 odd 20h-21h even)



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Tuesday 30th August

Session 4 : Chair Sophie Brasselet

8h45-9h15 Invited : “Recent advances in PSF engineering” Yoav Shechtman

9h15-9h30 Selected abstract 7 : “Single-molecule emitter multiplexing via PSF-encoding of the emission and excitation spectra” Peter Dedecker

9h30-9h45 Selected abstract 8 : “Enabling spectrally resolved single-molecule localization microscopy at high emitter densities” Johannes Hohlbein

9h45-10h00 Selected abstract 9 : “Single-Molecule Fluorescence Lifetime Imaging Using Wide-Field and Confocal-Laser Scanning Microscopy: a Comparative Analysis” Roman Tsukanov

10h00-10h15 Selected abstract 10 : “Fast and robust multicolor SMLM with a dual-path module for DNA-PAINT and STORM” Karoline Friedl

10h15-10h30 Selected abstract 11 : “Single Molecule Flux-Demixing ” Surabhi Sreenivas

10h30-11h00 coffee break

Session 5 : Chair Valentina Krachmalnicoff

11h00-11h30 Invited “Nanofluidics-seeing is believing” Aleksandra Radenovic

11h30-11h45 Selected abstract 12 : “Imaging single molecules on nanoparticles: exploiting PSF deformations for precise localization” Teun Huijben

11h45-12h00 Selected abstract 13 : “Single-defect localization microscopy reveals nanoscale molecular dynamics and order of liquids at 2D interfaces” Nathan Ronceray

12h00-12h15 Selected abstract 14 : “Enlightening microgel structure and internal environment with single molecule localization microscopy” Dominique Wöll

12h15-14h00 lunch

Session 6 : Chair Jonas Ries

14h00-14h30 Invited : “Quantitative SMLMS in 2 and 3 dimensions” Jean-Baptiste Sibarita

14h30-15h00 Invited : “Open-technology for Super-Resolution and Machine-Learning enabled Live-Cell BioImaging” Ricardo Henriques

15h00-15h15 Selected abstract 15 : “A novel similarity score for SMLM point clouds allows nanoscale architecture phenotyping” Dylan Owen

15h15-15h30 Selected abstract 16 : “DBlink : Visualizing dynamic localization microscopy data in super spatiotemporal resolution via deep learning” Along Saguy

15h30-15h45 Selected abstract 17 : “Event-based sensor for fast and dense single molecule localization microscopy” Clément Cabriel

15h45-16h30 coffee break



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Session 7 : Chair Ignacio Izeddin

16h30-17h00 Invited : “**Metal and Graphene Induced Energy Transfer Imaging**” Jörg Enderlein

17h00-17h30 Invited : “**smFLIM of plasmonic and dielectric nanostructures : where biophysics meets nanophotonics**” Valentina Krachmalnicoff

17h30-18h30 **Keynote** : “**Patterns within the dynamic organization of division**” Suliana Manley

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19h 00 : Depart from Institut Langevin for the conference dinner (by walk)

19h15 : Group photo

19h30 – 23h30 : **Conference dinner**



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Wednesday 31st August

Session 8 : Chair Mark Bates

8h45-9h15 Invited : **“MINFLUX reveals stepping motion of kinesin in living cells”** Jonas Ries

9h15-9h30 Selected abstract 18 : **“Scanners, Modelling and Probes for MINFLUX”** Francesco Balzarotti

9h30-9h45 S Selected abstract 19 : **“Single-molecule localization with molecular-scale precision by raster scanning a minimum of light”** Luciano A. Masullo

9h45-10h00 Selected 20 : **“Single-molecule localization microscopy with structured illumination and detection”** Andrea Bucci

10h00-10h30 Invited : **“Ultrasound localization microscopy”** Mathieu Pernot

10h30-11h00 coffee break

Session 9 : Chair Ricardo Henriques

11h00-11h30 Invited **“Visualizing cellular life: From single cell imaging to in vivo single-molecule biochemistry and (micro-)biology ”** Ulrike Endesfelder

11h30-12h00 Invited **“The functional nano-architecture of axonal actin”**, Christophe Leterrier

12h00-14h00 lunch

Session 10 : Chair Suliana Manley

14h00-14h15 Selected abstract 21 : **“Visualizing arcRNA conformation in cells with optical super-resolution microscopy”** Laurell Kessler

14h15-14h30 Selected abstract 22 : **“Genomic SMLM: challenges and strategies”** Sarah Aufmkolk

14h30-14h45 Selected abstract 23 : **“Superresolution microscopy reveals partial preassembly and subsequent bending of the clathrin coat during endocytosis”** Aline Tschanz

14h45-15h00 Selected 24 : **“Single molecule counting of neurotransmitter receptors at synapses in the native spinal cord”** Christian Specht

15h00-15h15 Selected 25 : **“resPAINT: Accelerating Volumetric Super-resolution Localisation Microscopy by Active Control of Probe Emission”**, Edward W Sanders

15h15-15h30 Selected 26 : **“ShareLoc – an open platform for sharing localization microscopy data”**, Jiachuan Bai

15h30 Poster prizes, closing remarks

16h00 End



Poster Session

Number	Title	Presenter
1	Adaptable and uniform illumination field as a tool for dye photophysics analysis in direct Stochastic Optical Reconstruction Microscopy	Lancelot Pincet
2	Fluorescence lifetime DNA-PAINT for multiplexed super-resolution imaging of cells	Nazar Oleksiievets
3	Confocal fluorescence lifetime single-molecule localization microscopy for multiplexing and 3D imaging	Oleksii Nevskyi
4	Super-resolution microscopy for DNA-protein interaction studies in vivo and in vitro	Marijonas Tutkus
5	Modeling dynamic single-molecule microscopy experiments for AI-based automation	Laura Weber
6	Studying molecular compartmentalization in bacteria through single-molecule colocalization	Chiara Caldini
7	Quantitative super-resolution microscopy unravels nanoscale patterns of membrane receptor networks	Marina Dietz
8	Towards an unbiased shape classification of super-resolution microscopy localizations	Siewert Hugelier
9	The Ang II treatment induce reorganization and changes in the lateral dynamics of Angiotensin II type 1 receptor in the plasma membrane elucidated by Photoactivated localization microscopy combined with image spatial correlation analysis	Yenisleidy de las Mercedes Zulueta Díaz
10	Unsupervised cell cycle inference for SMLM fixed cell data sets	Griffie Juliette
11	The Photoconversion Efficiency of mEos4b Depends on Laser Illumination Conditions Used in PALM	Jip Wulffele
12	Particle fusion of Single Molecule Localization Microscopy data reveals dimer structure of Nup96	Wenxiu Wang
13	Quantitative single-molecule localization microscopy of the tumor necrosis factor receptor superfamily	Tanja Ott
14	Vectorial Point Spread Function for fitting single molecule localization data	Awoke Negash
15	Computational advances in complex in vivo single-particle tracking fluorescence microscopy: TARDIS and DDA	Koen J.A. Martens
16	2D and 3D MINFLUX for Multicolor Bio-Imaging at the Nanometer Scale	Isabelle Jansen
17	Spatial organization of BAR proteins on endocytic-like saddle-shaped membranes	Simli Dey



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18	Exploiting Fluorescence Lifetime in Pulsed Interleaved MINFLUX	Jonas Zähringer
19	VOLUMETRIC INTERFEROMETRIC LATTICE LIGHT-SHEET IMAGING	Simao Coelho
20	Simulated structurally variable Nuclear Pore Complexes to survey the capabilities of SMLM analysis methods	Maria Theiss
21	Dual-color single molecule tracking of the MET receptor tyrosine kinase	Yunqing Li
22	Optical Quality Estimation of Objectives for 4pi Microscopes	Qingru Li
23	HDCluster: High-Degree Graph-Based Clustering Algorithm and its Application to Single Molecule Localization Microscopy	Ismail M. Khater
24	Constant False Alarm Rate (CFAR) Detector for Single Molecule Localization Microscopy	Miroslav Hekrdla
25	Altered tRNA dynamics during translocation on slippery mRNA visualized by 3D-smFRET as determinant of spontaneous ribosome frameshifting	Sarah Adio
26	Revealing cellular microtubule repair at the nanoscale	Ciarán Butler-Hallisey
27	Realisation of cost-effective, high-performance Stochastic Optical Reconstruction Microscopy (STORM) using mercury lamps and smart optical cage systems	Lin Wang
28	Self-Regeneration of Fluorescent Labels and Docking-Site-Mediated Photostabilization for Single-Molecule Fluorescence and Super-Resolution Imaging	Michael Scheckenbach
29	Single Molecule Imaging Simulations with Full Fluorophore Photophysics	Dominique Bourgeois
30	Detection of epigenetic base modifications on the single molecule level with DNA-PAINT kinetics	Julian Bauer
31	Influence of the supercritical emission in Coordinate and Height super-resolution Imaging with Dithering and Orientation (CHIDO) microscopy	Isael Herrera
32	Studying the endocytic machinery at the nanoscale by dual-color localization microscopy in yeast	Philipp Hoess
33	PoCA: a powerful visualization and quantification software for 3D single-molecule localization microscopy data	Florian Levet
34	An online platform for biomolecule trajectory analysis	Hippolyte Verdier
35	Polarization phase retrieval for Coordinate and Height super-resolution Imaging with Dithering and Orientation (CHIDO) microscopy	Luis Aleman Castaneda



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36	Quantitative Modeling of Super-resolved Structures in Localization Data	Yu-Le Wu
37	qPAINT analysis of podoplanin clustering in fibroblastic reticular cells uncovers CD44 function	Megan Joseph
38	Revealing the interfacial protein distribution in food emulsions using dSTORM	Abbas Jabermoradi
39	Microfluidic system for multiplexed 3D super-resolution imaging using DNA-PAINT in a 4Pi-SMS microscope	Xiangzhou Lao
40	Template free detection of continuous structural heterogeneity in localization microscopy	Sobhan Haghparast
41	Following Nucleoid Remodeling in <i>Deinococcus radiodurans</i> using Single Particle Tracking PALM	Jip Wulffele
42	Quantification of proteins with non-covalent tags	Soohyen Jang
43	Nanometer axial resolution with MIET	Anna Chizhik
44	ANNA-PALM-3D: Faster 3D super-resolution microscopy using deep learning	Benoit Lelandais
45	Revealing the oligomerization of Channelrhodopsin-2 in the cell membrane with single-molecule localization microscopy.	Ekaterina Bestsennaia
46	BrightSwitch®: A New Family of Dual Emissive Photoconvertible Fluorescent Probes for Bioimaging	Lazare SALADIN
47	Generation and characterization of new ultrastable PCFPs for quantitative SMLM	Neuhaus Abdelghani
48	Selective volumetric excitation and imaging for single molecule localization microscopy	Bassam HAJJ
49	Dual-color Single Molecule Localization Microscopy in <i>S. Cerevisiae</i> using Primed Conversion	Saeed Azizi
50	Quantitative mapping of membrane nanoenvironments through single-molecule imaging of solvatochromic probes	Daniel J Nieves
51	Two Routes to 3D Super-resolution Optical Fluctuation Imaging	Kristin Großmayer
52	A new mechanism of fibronectin fibril assembly revealed by live imaging and super-resolution microscopy.	Sophie Astrof
53	Single-molecule super-resolution imaging in reversibly cryo-arrested cells	Louise Régnier



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54	Single-molecule super-resolution imaging of microfabricated 3D substrates for 3D cell culture	Clément Cabriel
55	Protein free radical trapping with fluorescently labelled spin-traps as an early marker of lipid oxidation in oil-in-water emulsions	Suyeon Yang
56	Ligand-stimulated EGFR-FGFR2 cross-interactions studied through quantitative super-resolution microscopy	Christian Schreiber
57	Every molecule counts - The power of single molecule localization microscopy in your benchtop toolkit	Lara Laparra Cuervo
58	Nanoscale organization of the endogenous ASC speck	Ivo M. Glück
59	Quantifying dynamic protein-protein interaction at the single-molecule level	Christian Niederauer
60	The histone methyltransferase KMT2B sets up the genome for lineage formation by altering chromatin movement during priming	Maike Steindel
61	Vectorial PSF model with field dependent aberrations using Nodal Aberration Theory	Isabel E.A.C. Droste
62	Inverse modelling of point spread functions for single-molecule localization microscopy	Lucas-Raphael Müller
63	Super Redundancy (SReD) : a template-free intensity-based particle analysis framework	Afonso Mendes
64	Axial Scanning for 3D MINFLUX Microscopy	Maximilian K. Geismann
65	Simulation and preparation of localization microscopy datasets for graph-based deep learning	Diana Mindroc-Filimon
66	Revealing the interfacial interactions of single, ice-bound antifreeze proteins through subzero nanoscopy	Roderick Tas
67	Towards imaging of yeast DNA using Expansion Single Molecule Localization Microscopy (Ex-SMLM)	Mickaël LELEK
68	RNAP II diffusion investigated by combined SPT and FCS methods highlights a mechanism of oversampling in cell nuclei	Pierre Leclerc