



# the Oxford Centre for Soft & Biological Matter

## Away Day

Friday April 5th 2019  
Mathematical Institute  
Woodstock Road  
Oxford

The OCSBM away day 2019 is generously sponsored by:  
Christ Church Research Centre



The Leverhulme Trust

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The Max Planck Institute for Dynamics and Self Organisation



MAX-PLANCK-GESELLSCHAFT

# Programme

8:00	Poster Setup	
8:30	Registration; Coffee and Pastries	
9:00	Welcome and Introduction	
9:15	<b><i>Dullens Group</i></b> Roel Dullens Carla Fernandez-Rico  Nicholas Orr	Dullens Group Introduction Colloidal SU-8 polymer rods for three dimensional confocal imaging and optical tweezing Grain Boundaries in 3D Colloidal Crystals
10:00	<b><i>Doye Group</i></b> Jon Doye	Doye Group Introduction
10:45	Break	
11:15	<b><i>Perkin Group</i></b> Susan Perkin Hannah Hayler Romain Lhermerout James Hallett	Perkin Group Introduction Part 1: Introduction to the Surface Force Balance Part 2: Dynamical Aspects Part 3: Fields and Surface Potential
12:00	<b><i>Yeomans Group</i></b> Emmanuel Plan Yavor Novev Amim Doostmohammadi	Motile Microscopic Matter in a Viscoelastic Fluid Dynamics of Polymeric Aggregates in a Viscous Medium Tortoise and Hare in Bacterial Competition
12:45	Lunch	
13:45	<b><i>Golestanian Group</i></b> Ramin Golestanian Prathyusha Kokkoorakunnel Ramar Tunrayo Adeleke-Larodo Saeed Mahdisoltani	Introduction to the Department of Living Matter Physics Dynamics of phoretic colloids in spherical confinement Substrate-driven enzyme dynamics Long-range correlations and fluctuation-induced forces in driven electrolytes
14:30	<b><i>Aarts Group</i></b> Dirk Aarts Adam Stones  Lucia Parolini	Aarts group introduction Solving the inverse problem: model-free measurement of the pair potential in colloidal fluids from particle coordinates Development of droplet-based microfluidics platform for the interrogation of rare cells population
15:15	Break	
15:45	<b><i>Krishnan Group</i></b> Madhavi Krishnan Maria Bernalova Ali Behjatian	Krishnan group introduction Measuring the geometrical dimensions of the double helix in solution Understanding the electroviscous effect at the nanometre scale
16:30	<b><i>Outreach discussion</i></b> Dirk Aarts	
17:15	Posters and Drinks	
18:30	Poster Prize Announced	
19:00	Close	

# Participants    Poster Titles

## *Aarts Group*

Dirk Aarts	
Camille Boulet	An introduction to rheology through the study of Xanthan gel
Nicolas Descelee	Thermal Capillary Waves of Microdroplets in Confinement
Jack Holland	The influence of single-stranded oligonucleotides on the phase behaviour of liquid protein droplets
Sacha Ichbia	
Adam Mellul	Liquid crystal phase behaviour of the pf4 bacteriophage
Mariana de Oliveira	Synthesis of bent-core silica rods to study liquid crystal behaviour
Lucia Parolini	
Adam Stones	
Siu Ying Wong (Alice)	Phase Behaviour of 2D Colloidal Systems Using a Repulsive Optical Landscape

## *Doye Group*

Jon Doye  
Hemani Chhabra  
Hannah Fowler  
Colin Moody  
Domen Presern  
Ian Seet  
Max Tortora  
Dan Tracey

## *Dullens Group*

Roel Dullens	
Miranda Bell-Davies	Correlated diffusion of colloidal particles in two-dimensional random confinement
Arran Curran	Driven Anisotropic Particle under Time-delayed Feedback Control
Balkis Dohni	Interface properties of phase separated colloid-polymer mixtures
Carla Fernandez-Rico	
Joseph Hutchinson	Grain Growth in Impurity Doped Two-Dimensional Colloidal Crystals
Harriet Ley	Local Strain in Colloidal Crystals
James Marsh	Rotational diffusion of colloidal spheres in confinement
Nicholas Orr	
Heidi de Sousa	Colloidal SU-8 polymer rods: synthesis, characterisation and manipulation
Taiki Yanagishima	Simultaneous measurement of translational and rotational dynamics of spherical colloidal particles in dense suspensions

# Participants    Poster Titles

## *Golestanian Group*

Ramin Golestanian	
Tunrayo Adeleke-Larodo	Substrate-driven enzyme dynamics
Philip Bittihn	Engineered Control of Bacterial Population Dynamics
Prathyusha Kokkoorakunnel Ramankutty	Static and dynamic properties of phoretic colloids
Benoît Mahaul	A quantitative assessment of the Toner and Tu theory of flocking
Saeed Mahdisoltani	Long-range correlations and fluctuation-induced forces in driven electrolytes
Fanlong Meng	Collective motion of magnetic swimmers in microfluidic channels
Babak Nasouri	Efficiency limits of the three-sphere swimmer in viscous fluids
Yoav Pollack	Emergent Interaction Near Kinetic Jamming
Suropriya Saha	Pairing, waltzing and scattering of chemotactic active colloids
Evelyn Tang	Effective learning is accompanied by high dimensional and efficient representations of neural activity

## *Krishnan Group*

Madhavi Krishnan	
Ali Behjatian	
Maria Bernalova	
Sushanta Mahanta	Towards a single-molecule electrical conductance measurement in solution
Pawel Puczkarski	Towards a single-molecule electrical conductance measurement in solution

## *Perkin Group*

Susan Perkin	
Tim Groves	Interactions in Nano-Confined Films of Water-in-Salt Electrolytes
James Hallett	
Hannah Hayler	Underscreening in concentrated electrolytes
Romain Lhermerout	Are Buckminsterfullerenes “Molecular Ball Bearings”?
Carla Perez-Martinez	
Xiaoyue Wu	Colloidal Crystal in Confinement

## *Yeomans Group*

Julia Yeomans	Topological states in chiral active matter: dynamics blue phases and active half-skyrmions
Amin Doostmohammadi	
Rian Hughes	Chemically Active Nematics
Yavor Novev	
Emmanuel Plan	
Kristian Thijssen	Modelling Living Liquid Crystals as an Active Nematic
Guanming Zhang	Topological Defects driven by Active Nematic Behaviour of Cell Monolayers