Conference on Non-Equilibrium Science

Programme Booklet

KCL 25th – 27th June

KING'S College LONDON

Welcome to the 2nd CONES Conference on Non-Equilibrium Systems

- All talks will take place on the ground floor of the King's Building, Strand Campus, King's College London
- Coffee Breaks and Registration shall be in K0.20
- Lunch shall be served on the River Terrace (South side of the King's Building) weather permitting. Otherwise lunch will also be served in K0.20
- Posters shall be presented in K0.18 throughout the conference
- A Map of these locations is provide on the opposite page

King's Building: Ground Floor

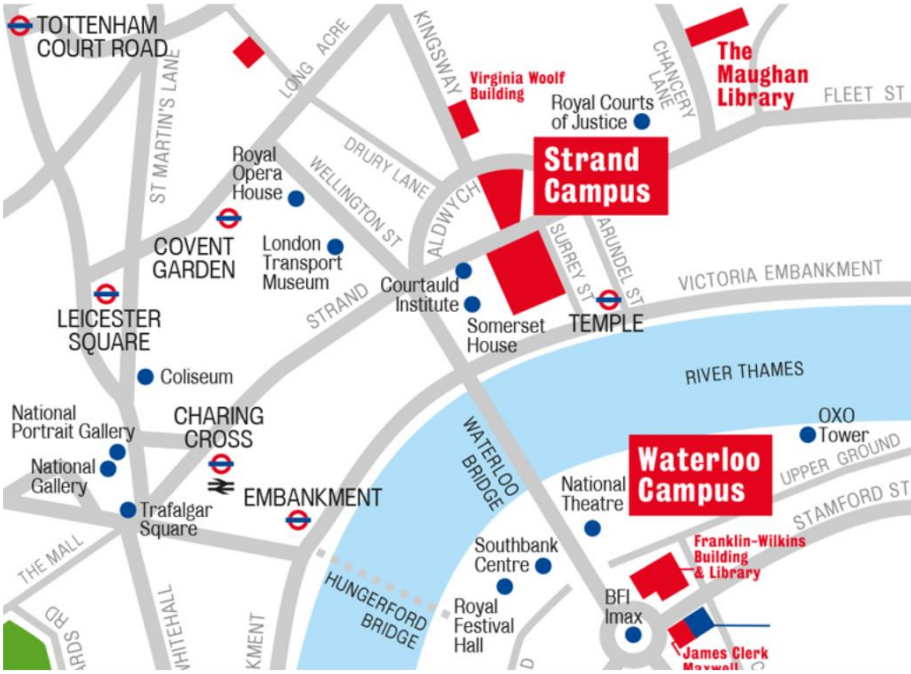
Local Food Information

King's College London is located in central London with many food options, restaurants and pubs within a short walk of the Strand Campus (Restaurant (r), Pub (p)).

Nearby locations include

- Shapur Indian (r)
- Thai Square (r)
- Temple Brew House (p)
- Cote Bistro (r)
- Porterhouse (p)
- The Cheshire Cheese (p)
- The George (p)
- Dishoom (r)
- Covent Garden (multiple p's & r's)

And many more.,,



Map of the Strand Campus in relation to Central London. Other KCL Campuses are shown in red.

Monday 25 June 2018

09:00–09:25 Coffee and Registration

Edmond J Safra Lecture Theatre

09:25–09:30 Welcome from Joe Bhaseen

09:30–10:15 **Markus Heyl** (Dresden)
Dynamical quantum phase transitions

10:15–11:00 **Pierfrancesco Urbani** (IPHT)
From jamming of particles to machine learning and back

11:00–11:30 *Coffee Break*

11:30–12:15 **Simone Pigolotti** (OIST, Okinawa)
Generic properties of stochastic entropy production

12:15–12:45 Poster Spotlights

12:45–14:30 *Lunch and Posters*

14:30–15:15 **Eric Vanden-Eijnden** (Courant Institute, NYU)
Parameters as interacting particles: asymptotic scaling, convexity, and error of neural networks

15:15–16:00 **Andrea Cavagna** (CNR-ISC, Institute for Complex Systems, Rome)
Dynamical Scaling in Natural Swarms

16:00–16:30 *Coffee Break*

16:30–17:15 **Anatoli Polkovnikov** (Boston)
Cluster Truncated Wigner Approximation for Dynamics of Interacting Quantum Systems

17:15–18:00 Poster Session

18:00–19:00 Welcome Reception in Terrace Café (Macadam Building, Strand Campus)

Tuesday 26 June 2018

09:00–09:25 Coffee and Registration

Edmond J Safra Lecture Theatre

09:30–10:15 **Ehud Altman** (Berkeley)
Ergodicity, entanglement and many-body localization in quantum systems

10:15–11:00 **Dmitry Abanin** (Geneva)
New non-equilibrium quantum many-body states enabled by ergodicity breakdown

11:00–11:15 Poster Spotlights

11:15–11:45 *Coffee Break*

	Physical ***Edmond J Safra Lecture Theatre***	**Statistical Mechanics** ***K0.16***
11:45–12:30	**Arijeet Pal** (Oxford) Quantum circuits, many-body localisation, and discrete time crystals	**Raffaella Burioni** (Parma) Neuronal Avalanches in cortex dynamics and the synchronization transition
12:30–13:00	**Federico Carollo** (Nottingham) Current fluctuations in boundary-driven quantum spin-chains	**Carl Dettmann** (Bristol) Network connectivity in complex geometries

13:00–14:30 *Lunch and Posters*

14:30–15:15	**Adam Nahum** (Oxford) Emergent statistical mechanics of entanglement'.	**Edgar Roldan** (ICTP, Trieste) Arcsine laws and extreme values in stochastic thermodynamics
15:15–15:45	**Filippo Maria Gambetta** (Nottingham) Discrete time crystals in metastable open quantum systems	**Carlos Perez-Espigares** (Nottingham) Critical phenomena and their microscopic origin in the dynamical fluctuations of driven diffusive systems
15:45–16:15	*Coffee Break*	

16:15–16:45	Marzena Symanska (UCL) Polariton quantum fluids in and out of equilibrium	**Markus Meuwly** (Basel) Dynamics Far from Equilibrium in Atmospheric Molecular Processes

16:45–18:00 Poster Session

Edmond J Safra Lecture Theatre

18:30–19:30 Public lecture – **Allan Tucker**

Three AI Algorithms Inspired by Data from the Life Sciences

Wednesday 27 June 2018

09:00–09:25 Coffee and Registration

Edmond J Safra Lecture Theatre

09:30–10:15 **Hernan Makse** (The City College of New York) Essential nodes in networks: connectome, Twitter and ecosystems

10:15–11:00 **Daniel Sussman** (Syracuse) Anomalous interfaces in simple models of dense biological tissue

11:00–11:15 Poster Spotlight

11:15–11:45 *Coffee Break*

	Physical ***Edmond J Safra Lecture Theatre***	**Biological** ***K0.16***
11:45–12:15	**Patrick Pietzonka** (Cambridge) Thermodynamic bounds on current fluctuations	**Ivet Bahar** (Pittsburgh) Multiscale Modeling and Simulations of Neurotransmitter Transport
12:15–12:45	**Katarzyna Macieszczak** (Cambridge) Thermodynamic uncertainty relations	**Richard Blythe** (Edinburgh) Universal Scaling of a growing interface constrained by a membrane

12:45–14:15 *Lunch and Posters*

14:15–14:45	**Robert Jack** (Cambridge) Large deviation of the active work in active fluid	**Carmen Molina-Paris** (Leeds) Stochastic descriptors to study the fate of naive T cell clonotypes in the periphery
14:45–15:15	**Patrick Ilg** (Reading) Nanorheology and magnetoviscosity of magnetic nanoparticles in viscoelastic environments	**Chiu Fan Lee** (Imperial) The physics of non-equilibrium phase separation: implications for stress granule formation in the cell cytoplasm

15:15–15:45 *Coffee Break*

15:45–16:30 **Luca Dall'Asta** (Turin)
Optimality in self-organized molecular sorting

16:30–17:15 **Ton Coolen** (KCL)
Inferring parameters of irreversible processes: replica analysis of overfitting in time-to-event regression

17:15–17:20 Concluding remarks