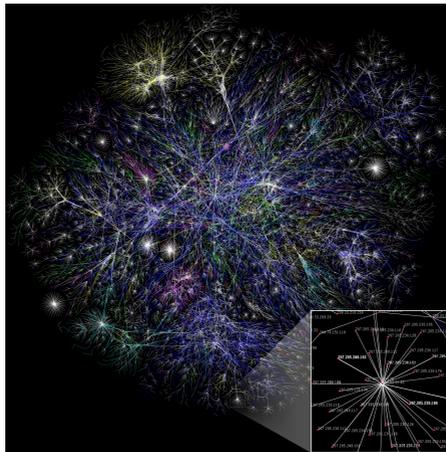


International Seminar & Workshop
8 - 26 October 2018 (workshop week: 15 - 19 October 2018)

Stochastic dynamics on large networks: Prediction and inference

PROGRAM



Scientific coordinators:

Manfred Opper • Technical University Berlin, Germany

Guido Sanguinetti • The University of Edinburgh, UK

Peter Sollich • Georg-August-University Göttingen, Germany & King's College London, UK

Organisation:

Maria Voigt • MPIPKS, Germany



Max-Planck-Institut für Physik komplexer Systeme

Nöthnitzer Str. 38, D-01187 Dresden

Tel.: +49-351-871-1932 / Fax: +49-351-871-2199

Email: dynet18@pks.mpg.de

Internet: <http://www.pks.mpg.de/dynet18>



Program

Seminar - week 1

Monday, 08 October / seminar room 1 & offices

- 13:00 - 13:15 Opening remarks for seminar participants:
Welcome to dynet18 and logistical information
- 13:15 - 14:30 Discussions
- 14:30 - 15:00 Coffee break (outside seminar room 1)
- 15:00 - 16:30 Discussions

Tuesday, 09 October / room 2 A 1 & offices

- 10:00 - 11:00 **Reimer Kühn** (King's College London)
Of Brains and Markets
- 11:00 - 11:30 Coffee break (room 2 A 1)
- 11:30 - 16:00 Discussions

Wednesday, 10 October / room 2 A 1 & offices

- 10:00 - 11:00 **Reinhold Schneider** (Technical University Berlin)
Variational Monte Carlo Method for Uncertainty
Quantification
- 11:00 - 11:30 Coffee break (room 2 A 1)
- 11:30 - 16:00 Discussions

Thursday, 11 October / 2 A 1 & offices

- 10:00 - 11:00 **Jens Karschau** (Technical University Dresden)
Renormalisation group theory for percolation in
time-varying networks
- 11:00 - 11:30 Coffee break (room 2 A 1)
- 11:30 - 16:00 Discussions

Friday, 12 October / room 2 A 1 & offices

- 10:00 - 11:00 **Chris Sherlock** (Lancaster University)
Fast exact inference for Markov jump processes
using the rate matrix
- 11:00 - 11:30 Coffee break (room 2 A 1)
- 11:30 - 16:00 Discussions

Workshop week

Sunday, 14 October

- | | |
|---------------|--|
| 18:00 - 20:00 | Registration in guest house 4, library |
| 19:00 - 21:00 | Welcome reception and dinner at the MPIPKS (cafeteria) |
| 19:30 - 21:00 | Informal discussions |

Monday, 15 October / seminar room 1

10:15 - 10:30

**Holger Kantz (MPIPKS) and
scientific coordinators**
Opening

chair morning session: Guido Sanguinetti

10:30 - 11:30

Eric Vanden-Eijnden (Courant Institute New York)
Parameters as interacting particles:
asymptotic scaling, convexity, and error of neural
networks

11:30 - 12:30

Vladimir Spokoiny (WIAS Berlin)
Prior impact in Bayesian inference

12:30 - 13:30

Lunch break

13:30 - 14:30

Discussions

chair afternoon session: Manfred Opper

14:30 - 15:00

Christian Donner (Technical University Berlin)
Bayesian Inference of Dynamic Neuronal Networks
from Single Trial Spike Data

15:00 - 15:30

Johannes Zierenberg
(Max Planck Institute for Dynamics and Self-Organization)
Homeostatic plasticity and external input shape
neural network dynamics

15:30 - 16:00

Discussions

16:00 - 16:30

Coffee break

chair dynet18 colloquium: Christoph Weber

16:30 - 17:30	Ron Meir (Technion - Israel Institute of Technology) dynet18 Colloquium: Exploration in reinforcement learning
17:30 - 18:30	Discussions
18:30 - 19:30	Dinner
19:30 - 21:00	Discussions

Tuesday, 16 October / seminar room 1

chair morning session: Peter Sollich

09:00 - 10:00

Gasper Tkacik

(Institute of Science and Technology Austria)
Optimal decoding of cellular identities in a genetic network

10:00 - 10:30

Coffee break

10:30 - 11:30

Tobias Galla (The University of Manchester)
Well stirred is not well mixed

11:30 - 12:30

Ramon Grima (University of Edinburgh)

Linear mapping approximation of gene regulatory networks with stochastic dynamics

12:30 - 13:30

Lunch break

13:30 - 14:20

Discussions

chair afternoon session: Ramon Grima

14:20 - 14:40

David Schnoerr (Imperial College London)

Cox process representation and inference for stochastic reaction-diffusion processes

14:40 - 15:00

Stefanie Winkelmann (Zuse Institute Berlin)

Hybrid models for multiscale reaction-diffusion kinetics

15:00 - 16:00

Heinz Köppl (Technical University Darmstadt)

Model reductions for random processes on graphs

16:00 - 16:30

Coffee break

16:30 - 18:30	Discussions
18:30 - 19:30	Dinner
19:30 - 21:00	Discussions & Poster session I (focus on odd numbers)

Wednesday, 17 October / seminar room 1

chair morning session: Guido Sanguinetti

- 09:00 - 10:00 **Luca Bortolussi** (University of Trieste)
Bayesian verification of behavioural properties
- 10:00 - 10:10 Group photo
(to be published on the event's web page)
- 10:10 - 10:30 Coffee break
- 10:30 - 11:30 **Carsten Hartmann** (Freie Universität Berlin)
A least-squares Monte-Carlo approach to rare events
simulation
- 11:30 - 12:30 **Ben Leimkuhler** (University of Edinburgh)
Efficient sampling in high dimensions
- 12:30 - 13:30 Lunch break
- 13:30 - 14:00 Discussions
- 14:00 departure to Meissen by bus from the institute
(meeting point: reception of MIPPKS)
- 15:00 - 16:30 guided tour of Meissen
- 16:30 - 18:00 guided tour in the porcelain manufactory
Meissen
- 18:00 - 20:00 dinner at the café & restaurant **MEISSEN**
(in the porcelain manufactory Meissen)
Tel.: +49 3521 468 730
- 20:00 return to the institute/hotel by bus

Thursday, 18 October / seminar room 1

chair morning session: Reimer Kühn

09:00 - 10:00 **Sebastian Reich** (University of Potsdam)
Data assimilation as a control problem

10:00 - 10:30 Coffee break

10:30 - 11:30 **David Saad** (Aston University)
Optimising Spreading Processes

11:30 - 12:30 Discussions

12:30 - 13:30 Lunch break

13:30 - 14:20 Discussions

chair afternoon session: Peter Sollich

14:20 - 14:40 **Malbor Asllani** (University of Namur)
Hopping in the Crowd to Unveil Network
Topology

14:40 - 15:00 **Federico Tomasi**
(Università degli Studi di Genova)
Latent Variable Time-varying Network Inference

15:00 - 16:00 **José Bento** (Boston College)
Distributed Averaging via ADMM, Random Walks
on Graphs and Markov Chain Lifting

16:00 - 16:30 Coffee break

16:30 - 17:30 **Chris Sherlock** (Lancaster University)
Fast exact inference for Markov jump processes
using the rate matrix

Program

17:30 - 18:30	Discussions
18:30 - 19:30	Dinner
19:30 - 21:00	Discussions & Poster Session II (focus on even numbers)

Friday, 19 October / seminar room 1

chair morning session: Manfred Opper

- 09:00 - 10:00 **Luca Dall'Asta** (Politecnico di Torino)
Inference and prediction in epidemic processes
on networks
- 10:00 - 10:30 Coffee break
- 10:30 - 10:50 **Johannes Zonker** (Freie Universität Berlin)
Mathematical modeling, simulation and analysis
of spreading processes in ancient times
- 10:50 - 11:10 **Jonathan Khedair** (King's College London)
Inference in Non-Ergodic Market Models
- 11:10 - 11:30 Closing remarks
- 11:30 - 12:30 Discussions
- 12:30 - 13:30 Lunch break
- 13:30 - 15:00 Informal Discussions & departure

Seminar - week 2

Monday, 22 October / room 1 D 1 & offices

15:00 - 16:00 **Leonardo Ermann** (CNEA - CONICET)
Google matrix of Bitcoin network

16:00 - 16:30 Coffee break (room 1 D 1)

16:30 - 19:00 Discussions

Tuesday, 23 October / room 2 A 1 & offices

10:00 - 11:00 **Dimitra Maoutsa** (Technical University Berlin)
Revealing network physical interactions from event
timing patterns: A model-free approach

11:00 - 11:30 Coffee break (room 2 A 1)

11:30 - 16:00 Discussions

Wednesday, 24 October / room 2 A 1 & offices

10:00 - 11:00 **Alfredo Braunstein** (Politecnico di Torino)
Loop corrections in spin models through density
consistency

11:00 - 11:30 Coffee break (room 2 A 1)

11:30 - 16:00 Discussions

Thursday, 25 October / room 2 A 1 & offices

- 10:00 - 11:00 **Michalis Michaelides** (University of Edinburgh)
Fluid approximation for unstructured continuous-time Markov chains
- 11:00 - 11:30 Coffee break (room 2 A 1)
- 11:30 - 16:00 Discussions

Friday, 26 October / room 2 A 1 & offices

- 10:00 - 11:00 **Burak Cakmak** (Technical University Berlin)
Dynamical Aspects of the TAP Equations with Arbitrary Rotation Invariant Random Coupling Matrices
- 11:00 - 11:30 Coffee break (room 2 A 1)
- 11:30 - 14:00 Discussions