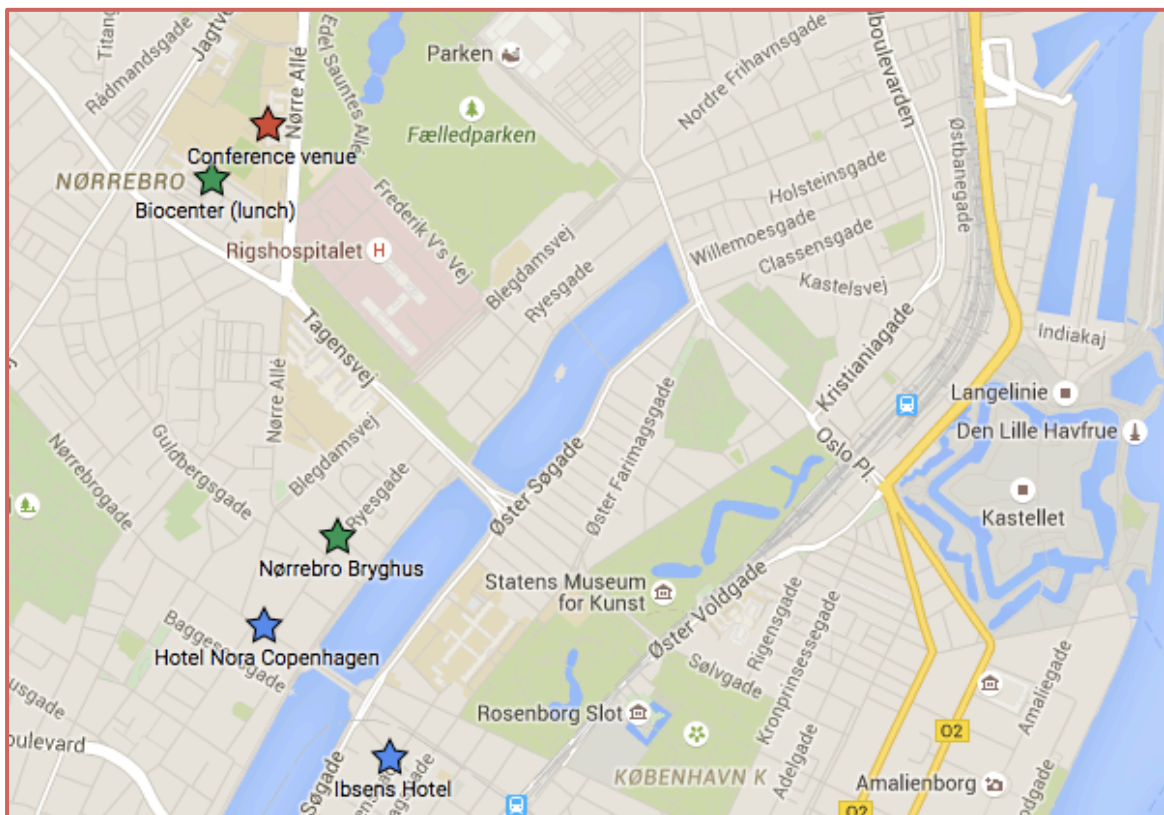Workshop on

Mathematical Trends in
Reaction Network Theory

July 1-3, 2015, Copenhagen, Denmark

Research group on *Mathematics of Reaction Networks*
Department of Mathematical Sciences
University of Copenhagen

Wednesday July 1st

9:00 -	Registration	
9:20 - 9:30	Opening ceremony	
9:30 - 10:10	**Sebastian Walcher** *Computational aspects of quasi-steady state reduction*	
10:10 - 10:50	**Gheorghe Craciun** *A proof of the Global Attractor Conjecture*	
10:50 - 11:10	Coffee break	
11:10 - 11:50	**John Baez** *Probabilities versus Amplitudes*	
11:50 - 12:30	**Michal Komorowski** *Information flow in signal transduction pathways*	
12:30 - 14:00	Lunch	
	Parallel session 1, Aud 8	Parallel session 2, Aud 10
14:00 - 14:25	Georg Regensburger *Parametrizing complex balancing equilibria of generalized mass-action systems*	Ankit Gupta *Estimation of parameter sensitivity for stochastic reaction networks*
14:25 -14:50	Shodhan Rao *Complex and detailed balancing of chemical reaction networks revisited*	Michael Assaf *The Effect of Extrinsic Noise on Gene Regulation*
14:50 - 14:55	Short break	
14:55 - 15:20	Meritxell Sáez *Recovering a reaction network after linear elimination of species*	Namiko Mitarai *Emergence of diversity in a model ecosystem*
15:20 - 15:45	Badal Joshi *Identifying Atoms of Multistationarity*	Tat Dat Tran *A connection between Population Genetics and Chemical Reaction Network*
15:45 - 16:15	Coffee break	
16:15 - 16:40	Antonio A. Alonso *The Structure of feasible equilibria for Mass Action Law (MAL) kinetic systems*	Preben Graae Sørensen *Dynamics of heterogeneous cell populations*
16:40 - 17:05	Stefan Müller *Optimal resource allocation in metabolic networks*	Jan O. Haerter *Food web assembly rules*
17:05 - 17:30	Gabor Szederkenyi *A computation-oriented representation of kinetic systems with rational reaction rates*	Sergei Maslov *Parkinson's Law in bacterial regulation*
17:45 - 19:00	**Poster session and reception,** Main hall	

Venue:
- Invited talks: Auditorium 5.
- Registration and coffee breaks: main hall, next to the stairs to Auditorium 5.
- Poster session and reception: main hall, under Auditorium 8 and 10.
- Lunch: Biocenter cantine

Thursday July 2nd

9:30 - 10:10	**Ovidiu Radulescu** *Taming the complexity of biochemical networks through model reduction and tropical geometry*	
10:10 - 10:50	**Nikki Meshkat** *Algebraic Techniques for the Parameter Identifiability Problem in Systems Biology*	
10:50 - 11:10	Coffee break	
11:10 - 11:50	**János Tóth** *On the form of kinetic differential equations*	
11:50 - 12:30	**David Doty** *Computation by (not about) chemistry*	
12:30 - 14:00	Lunch	
	Parallel session 1, Aud 8	Parallel session 2, Aud 10
14:00 - 14:25	Irene Otero-Muras *Chemical Reaction Network Theory (CRNT) insights to improve parameter identifiability in biochemical reaction network models*	David Schnoerr *Breakdown of the chemical Langevin equation and moment closure approximations for stochastic chemical kinetics*
14:25 - 14:50	Carsten Conradi *Mathematical analysis of multisite phosphorylation*	Daniele Cappelletti *Complex balanced reaction systems and Product-form Poisson distribution*
14:50 - 14:55	Short break	
14:55 - 15:20	Maya Mincheva *Graph-theoretic condition for multistationarity in conservative networks*	Matteo Polettini *Chemical networks and their topology: a thermodynamic perspective*
15:20 - 15:45	Balázs Boros *Two applications of the Deficiency-One Algorithm*	Kim Sneppen *Promoters kinetics and transcriptional bursts in bacteria*
15:45 - 16:15	Coffee break	
16:15 - 16:40	Michael Marcondes de Freitas *Obtaining Persistence from Simplified Models*	Mogens H. Jensen *Coupled Oscillators and Arnold Tongues in Cell Dynamics*
16:40 - 17:05	Jeanne Maria Onana Eloundou-Mbebi *From robustness in concentration to robustness of network properties*	Antoni Ferragut *Darboux integrability in CRN models*
17:05 - 17:30	German Enciso *Absolutely Robust Networks and Dose Responses*	Andreas Weber *Efficient methods to detect saddle-node and Andronov-Hopf bifurcations in chemical reaction networks*
17:30 - 19:30	**Free time**	
19:30 -	**Conference dinner at Nørrebro Bryghus**	

Conference dinner:
- **Nørrebro Bryghus,** Ryesgade 3, 2200 København

Friday July 3rd

9:30 - 10:10	**Alan D. Rendall** *Dynamics of phosphorylation systems*
10:10 - 10:50	**Manoj Gopalkrishnan** *Statistical inference with a chemical soup*
10:50 - 11:10	Coffee break
11:10 - 11:50	**David F. Anderson** *Stochastic models of biochemical reaction systems and absolute concentration robustness*
11:50 - 12:30	**Mustafa Khammash** *Real-Time Control of Gene Expression*
12:30 - 12:40	Closing remarks
12:40 - 14:00	Lunch

Sight-seeing

We plan a boat trip Friday afternoon in the canals and harbor of Copenhagen. The boat departs 16:55 from **Holmens Kirke** (church), opposite the front of the parliament (Folketinget). We should meet at **16:30** at the departure place. The trip takes about 60 mins. The price is DKK 40, which must be paid in **cash**.

Link to boat company and map: http://www.havnerundfart.dk/
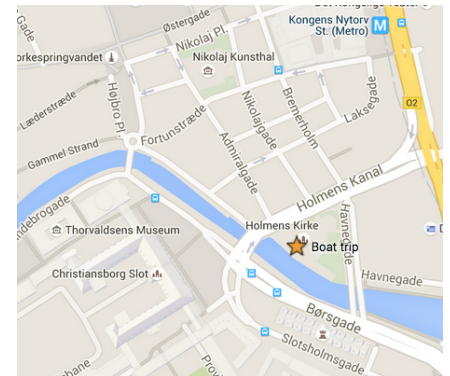
Practical information

• *Wifi*: The preferred choice is **eduroam** if you have access to it. If not, try "Conference" with username and password: Bohr2013. If nothing works, let us know and we will create a guest account for you.

• Downloadable *book of abstracts*:
> http://www.math.ku.dk/~efeliu/trendsrnt/book_of_abstracts.pdf

• *Workshop app*: Install the free app **eventbase**. Search for "Copenhagen" or "Trends" to find the workshop and launch the site. The program is then downloaded on your device and can be accessed even without internet connection.

Note for Apple users: when installing the app, your device will probably restart. Just find the app again after your device has been restarted.

• The building closes for the public at **18pm**. If you need to go out of the building after 18pm and back in, arrange with someone in the local organizing committee how to come back in.

• *Contact numbers*: Carsten (+45 5131 9991), Elisenda (+45 52690449).