**Abstract**

Stochastic reaction networks (CRNs) are often used to describe systems with small molecular counts, which applies to many processes in living systems. I will introduce their dynamics following continuous-time Markov processes. Studying stochastic CRNs is in general hard, both analytically and by simulation. In particular, stationary distributions of stochastic reaction networks are only known in some cases. I will review some results on form of stationary distribution and convergence to stationary distribution. Then I am going to analyse CRNs under the operation of join and examine conditions such that the form of the stationary distributions of a CRN is derived from the parts of the decomposed CRNs. To illustrate the theory I present examples of stochastic reaction networks to highlight the decomposition.

**Biography**

Linard Hoessly is a postdoc at the Department of Mathematical Sciences of the University of Copenhagen, associated with the Section for Statistics and Probability Theory. Linard completed his PhD in Mathematics in 2019 at the University of Fribourg (Switzerland). The topic of his thesis was probabilistic and combinatorial structures in mathematical biology, supervised by Emanuele Delucchi and Christian Mazza.

Before that, Linard studied Mathematics at the University of Zurich and ETH Zurich; he obtained his BSc degree in 2014 and his MSc degree in 2015.

Linard's interests include stochastic processes and dynamics with applications in biology and the sciences. In Copenhagen, he will be working with the research group Mathematics of reaction networks (MBIO) under the supervision of Carsten Wiuf.