A PhD thesis position is available in the ANR/DFG project SYMBIONT "Symbolic Methods for Biological Networks". This PhD thesis should start not later than 1/10/2018. The thesis will be supervised by Prof. Ovidiu Radulescu at the laboratory DIMNP in Montpellier. The PhD student will register in the doctoral school I2S at the University of Montpellier. Our working language is English.

PhD thesis project: **Tropical geometry methods for analysis of biochemical networks in systems biology and medicine**

Summary: Tropical geometry methods, also known as idempotent or max-plus algebras found numerous applications to computer science, physics, railway traffic, economy, and statistics. Research in this very recent field is particularly active; in algebraic geometry, it concerns asymptotic properties of systems of algebraic equations. In this thesis, we will use tropical geometry methods for developing new model order reduction methods for large systems of differential equations with applications in robotics, systems biology and computational medicine.

Team: We develop mathematical, physical and computer science approaches for the understanding of the functioning of biological systems. Our environment is strongly interdisciplinary as we are part of a biology lab and we gather mathematicians, computer scientists, physicists and biologists. At the center of our approaches is the multi-scale modelling of the biological processes by using statistical physics, dynamical systems and stochastic processes techniques. Our priority is to identify system's critical targets and essential mechanisms. This knowledge can be used to elaborate new therapies against complex diseases. The team benefits from an independent computer network (several Linux workstations with 20 cores processors) and from the access to the high performance computing platform HPC@LR.

Who can apply: We are looking for master or engineering students with good background in mathematics and computer science and motivated by applications to biology.

How to apply: Your application should include a curriculum vitae, a motivation letter, the names and email addresses of your references. Please send your application as one PDF file by email to Ovidiu Radulescu (ovidiu.radulescu@umontpellier.fr) by April 30, 2018.

If you have questions, please do not hesitate to contact us by email.