Abstract

The study of cell life at the molecular level entails the understanding and identification of complex chemical interactions that take place within each individual cell. Modelling of such a huge network is already a very challenging task, however, even if a complete model would become available, its interpretation and understanding literally calls for a modular approach, in which smaller subsystems comprising a limited number of chemical interactions, are identified and their functionality characterized. The seminar describes some work in the direction of characterizing the qualitative behaviour of open chemical reaction networks, that is, networks which may exhibit inflows and outflows and are not thermodynamically isolated. Some graph theoretical criteria are developed to prove persistence, or boundedness of solutions. Tools used range from Petri Nets theory to differential inclusions and embedding techniques.