

Thermodynamic efficiency of autocatalytic networks

Alessandro Ravoni

Crn-iac, Rome, Italy

Autocatalytic networks are reaction networks suggested to be at the basis of life. The reflexively and food-generated theory provides a formal definition of this system in terms of graphs with peculiar topological characteristics, and helps to elucidate both their structural and dynamic properties. In this work, I use recent results on the nonequilibrium thermodynamics of chemical reaction networks to study the connection between the constraints a network must satisfy to be autocatalytic and its thermodynamic properties, and I show that these systems can exhibit a wide variety of thermodynamic behaviours.