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Title:

Species Composition and Reversibility in Chemical Reaction Network Theory

Abstract:

Chemical Reaction Network Theory (CRNT) is a field of research that uses mathematics to investigate the many questions surrounding chemical reactions. At the foundation of this research lies a specific definition of a reaction network, which both expresses the reality of chemistry and facilitates mathematical reasoning. The definition however is quite generous; it allows systems that have no chemical interpretation. This can be for good reasons. For instance, population models can be studied through CRNT. There are also drawbacks. We observe that some basic specificities of chemistry are often ignored, and consequently there could be missed opportunities for findings of immediate application in chemistry. With this in mind, we proposed a notion of species composition to augment the definition of a reaction network when suitable. We also proposed a notion of reversibility which is weaker than strict reversibility. We posit that it reflect non-strict reversibility better than weak reversibility as defined in CRNT. Our talk will focus on explaining and making relevant these notions.