

A Linear Programming Approach to Weak Reversibility and Linear Conjugacy of Chemical Reaction Networks

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A numerically effective procedure for determining weakly reversible chemical reaction networks that are linearly conjugate to a known reaction network is proposed in this paper. The method is based on translating the structural and algebraic characteristics of weak reversibility to logical statements and solving the obtained set of linear (in)equalities in the framework of mixed integer linear programming. The unknowns in the problem are the reaction rate coefficients and the parameters of the linear conjugacy transformation. The efficacy of the approach is shown through numerical examples.

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