The Maxwell-Stefan system, Old and New

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In this talk, we focus on the Maxwell-Stefan system, describing diffusive phenomena in a multicomponent gas mixture. After introducing the model, we give an overview of the existing results regarding local-in-time existence and uniqueness of strong solutions and global-in-time existence and asymptotic behavior of weak solutions. We, then, present some new results regarding the absence of anomalous dissipation and the uniqueness of weak solutions. Finally, we discuss its non-isothermal analogue, called Maxwell-Stefan-Fourier, for which one can prove global-in-time existence of weak solutions and weak-strong uniqueness.

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