



Karlstad Applied Analysis Seminar (2021)

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Unification of Discrete and Continuous Coagulation-Fragmentation Equations

Abstract

Since the early 20th century, the coagulation-fragmentation process has been studied using two types of structure: where the size of particles is taken as a discrete or continuous variable. The former school of thought makes use of a system of ODEs to model the process, while the latter uses a single PDE. In this talk, I will formulate a size-structured coagulation-fragmentation equation in the space of Radon measures endowed with the bounded Lipschitz norm. I will show under this framework the model is well-posed and unifies the study of both the discrete and continuous coagulation-fragmentation equations. I will also present multiple finite difference schemes and discuss their advantages and disadvantages.