Asymptotic analysis of time dependent solutions for the coagulation equation with source and efflux

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Abstract

This article provides mathematical proof of the existence of stationary solutions for the coagulation equation including source and efflux terms. We demonstrate the convergence of time dependent solutions to these stationary solutions and highlight the exponential rate of convergence. These properties are analyzed for affine linear coagulation kernels, non-negative source terms and positive efflux rates. Numerical examples are included to demonstrate the predicted convergence behaviour.

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