



PIMS / AMI Seminar



Friday, May 20, 2016
3:00 p.m.
CAB 657

“Rates of Convergence to Scaling Profiles in a Submonolayer Deposition Model and the Preservation of Memory of the Initial Condition”

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Abstract

We establish rates of convergence of solutions to scaling (or similarity) profiles in a coagulation type system modelling submonolayer deposition. We prove that, although all memory of the initial condition is lost in the similarity limit, information about the large cluster tail of the initial condition is preserved in the rate of approach to the similarity profile. The proof relies in a change of variables that allows for the decoupling of the original infinite system of ordinary differential equations into a closed two-dimensional nonlinear system for the monomer–bulk dynamics and a lower triangular infinite dimensional linear one for the cluster dynamics. The detailed knowledge of the long time monomer concentration, which was obtained earlier by Costin et al. using asymptotic methods and is rederived here by center manifold arguments, is then used for the asymptotic evaluation of an integral representation formula for the concentration of j -clusters. The use of higher order expressions, both for the Stirling expansion and for the monomer evolution at large times allow us to obtain, not only the similarity limit, but also the rate at which it is approached.

Refreshments will be served in CAB 649 at 2:30 p.m.