Oscillatory kinetics in cluster-cluster aggregation

MiR@W day: Predictive Modelling at W

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## Monday, 12th June, 1 p.m.
MS.04, Mathematics Institute

Abstract: I will discuss the mean field kinetics of irreversible coagulation in the presence of a source of monomers and a sink at large cluster sizes which removes large particles from the system. These kinetics are described by the Smoluchowski coagulation equation supplemented with source and sink terms. In common with many driven dissipative systems with conservative interactions, one expects this system to reach a stationary state at large times characterised by a constant flux of mass in the space of cluster sizes from the small-scale source to the large-scale sink. While this is indeed the case for many systems, I will present here a class of systems in which this stationary state is dynamically unstable. The consequence of this instability is that the long-time kinetics are oscillatory in time. This oscillatory behaviour is caused by the fact that mass is transferred through the system in pulses rather than via a stationary current in such a way that the mass flux is constant on average. The implications of this unusual behaviour the non-equilibrium kinetics of other systems will be discussed.

This seminar is part of the MiR@W day: Predictive Modelling at W. Other confirmed speakers are

Peter Brommer (Engineering)
Andreas Dedner (Mathematics)
Weisi Guo (Engineering)
Igor Khovanov (Engineering)
Mohad Mousavi-Nezhad (Engineering)
Simon Spencer (Statistics and WASC)

More info: http://warwick.ac.uk/wcpm/seminars
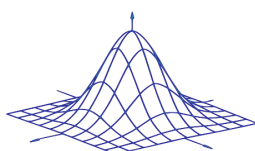
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