



Numerical Analysis Seminar

On the Diffusive-Mean Field Limit for Weakly Interacting Diffusions Exhibiting Phase Transitions

Professor G.A. Pavliotis
Imperial College London, UK

Abstract

We present recent results on the statistical behaviour of a large number of weakly interacting diffusion processes evolving under the influence of a periodic interaction potential. We focus our attention on the combined mean field and diffusive (homogenisation) limits. In particular, we show that these two limits do not commute if the mean field system constrained on the torus undergoes a phase transition, i.e., if it admits more than one steady state. A typical example of such a system on the torus is given by the noisy Kuramoto model of mean field plane rotators. As a by-product of our main results, we also analyse the energetic consequences of the central limit theorem for fluctuations around the mean field limit and derive optimal rates of convergence in relative entropy of the Gibbs measure to the (unique) limit of the mean field energy below the critical temperature. This is joint work with M. Delgadino (UT Austin) and R. Gvalani (MPI Leipzig).

Date: November 23, 2021 (Tuesday)

Time: 5:00 – 6:00pm (Hong Kong Time)

Venue: **Room 210, Run Run Shaw Bldg., HKU**
and

ZOOM: <https://hku.zoom.us/j/>

Meeting ID: 913 6532 3891

Password: 310656



Attendance limited
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