Seminar/Talk

Fluctuations in conservative systems and SPDEs

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Host: Julian Fischer

Fluctuations are ubiquitous in non-equilibrium conservative systems. The analysis of their large deviations lead to macroscopic fluctuation theory (MFT), a general framework for non-equilibrium statistical mechanics. MFT is based on a constitutive formula for large fluctuations around thermodynamic variables, and can be justified from fluctuating hydrodynamics. The latter postulates conservative, singular SPDEs to describe fluctuations in systems out of equilibrium. Both theories are informally linked via zero noise large deviations principles for SPDEs. In this talk, we demonstrate how the analysis of large deviations of interacting particle systems and conservative SPDEs lead to intricate and open problems for PDEs with irregular coefficients. In the last part of the talk, we present a positive result in this direction, by proving the well-posedness of parabolic-hyperbolic PDEs with irregular coefficients.

Thursday, March 30, 2023 04:15pm - 05:15pm
Heinzel Seminar Room (I21.EG.101), Office Building West, ISTA

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