



Mathematics and CS Seminar

Derivation of mean-field models for sedimenting particles with small inertia

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Host: Julian Fischer

Starting from a microscopic model for sedimenting particles, we will discuss the derivation of mesoscopic and macroscopic equations for the behaviour of their respective phase-space and number density. We will see that the resulting mean-field limits - the transport-Stokes and the Vlasov-Stokes equation - can be understood as zero and first order approximation of the microscopic dynamics in terms of strength of the inertia of the particles. I will show how the classical approach of Hauray to mean-field limits can be generalized to arbitrary Wasserstein distances and how information on the well-behaved zero-order approximation can be used to perturbatively derive a fluid-kinetic equation from microscopic dynamics. Based on joint work with Richard Hfer (Regensburg).

Tuesday, March 5, 2024 05:15pm - 06:15pm

Office Bldg West / Ground floor / Heinzl Seminar Room (I21.EG.101)



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