Lothar-Collatz-Seminar

Thu, 09. Feb · 12:00 · Geom H3

Dr. Ivan Yaroslavtsev (UHH)

Stabilization by transport noise and enhanced dissipation in the Kraichnan model

Abstract:

Thanks to the work of Arnold, Crauel, and Wihstutz it is known that for any self-adjoint operator T acting on a finite dimensional space with the negative trace the corresponding linear equation $dx_t = Tx_t dt$ can be stabilized by a noise, i.e. there exists operator-valued Brownian motion W such that the solution of $dx_t + dW x_t = T x_t dt$ vanishes a.s. for any initial value $x_0 = x$. The goal of the talk is to extend this theorem to infinite dimensions. Namely, we prove that the equation $du_t = (\Delta + C)u_t dt$ can be noise stabilized and that an arbitrary large exponential rate of decay can be reached. The sufficient conditions on the noise are shown to be satisfied by the so-called Kraichnan model for stochastic transport of passive scalars in turbulent fluids. This talk is based on joint work with Prof. Benjamin Gess (MPI MiS and Bielefeld University).

For further information please contact

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