

Title: Heat equation with Dirichlet white noise boundary conditions.

Abstract: The talk is based on a joint work with Ben Goldys (Univ. Sydney). We study inhomogeneous Dirichlet boundary value problems associated to a linear parabolic equation on bounded and unbounded domains with white noise boundary data. Our main assumption is that the heat kernel of the corresponding homogeneous problem enjoys the Gaussian type estimates taking into account the distance to the boundary. Under mild assumptions about the domain, we show that the homogeneous problem defines strongly continuous semigroup in weighted L^p - spaces where the weight is a proper power of the distance from the boundary. We also prove some smoothing properties and exponential stability of the semigroup. Finally, we reformulate the Cauchy-Dirichlet problem with white noise boundary data as an evolution equation in the weighted space and prove the existence of Markovian solutions.