

Transport equations with fractal noise - existence, uniqueness and regularity of the solution

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The main result of the present paper is a statement on existence, uniqueness and regularity for mild solutions to a parabolic transport diffusion type equation that involves a non-smooth coefficient. We investigate related Cauchy problems on bounded smooth domains with Dirichlet boundary conditions by means of semigroup theory and fixed point arguments. Main ingredients are the definition of a product of a function and a (not too irregular) distribution as well as a corresponding norm estimate. As an application, transport stochastic partial differential equations driven by fractional Brownian noises are considered in the pathwise sense.

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