

Well-posedness of stochastic evolution equations with Hölder continuous noise

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We show existence and pathwise uniqueness of probabilistically strong solutions to a pseudomonotone stochastic evolution problem on a bounded domain $D \subseteq \mathbb{R}^d$, $d \in \mathbb{N}$, with homogeneous Dirichlet boundary conditions and random initial data $u_0 \in L^2(\Omega; L^2(D))$. The main novelty is the presence of a merely Hölder continuous multiplicative noise term. In order to show the well-posedness, we simultaneously regularize the Hölder noise term by inf-convolution and add a perturbation by a higher order operator to the equation. Using a stochastic compactness argument, we may pass to the limit and we obtain first a martingale solution. Then, by a pathwise uniqueness argument, we get existence of a probabilistically strong solution.