

# Renormalized solutions for a stochastic $p$ -Laplace equation with $L^1$ -initial data

Aleksandra Zimmermann

University of Rostock and University of Duisburg-Essen

We consider a  $p$ -Laplace evolution problem with stochastic forcing on a bounded domain  $D \subset \mathbb{R}^d$  with homogeneous Dirichlet boundary conditions for  $1 < p < \infty$ . The additive noise term is given by a stochastic integral in the sense of Itô. The technical difficulties arise from the merely integrable random initial data  $u_0$  under consideration. Due to the poor regularity of the initial data, estimates in  $W_0^{1,p}(D)$  are available with respect to truncations of the solution only and therefore well-posedness results have to be formulated in the sense of generalized solutions. We extend the notion of renormalized solution for this type of SPDEs, show well-posedness in this setting and study the Markov properties of solutions.