Implicit Euler Scheme for Stochastic Partial Differential Equations with Monotone Drift

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In this talk we derive convergence rates for the implicit Euler scheme for stochastic partial differential equations (SPDE). Using the variational formulation of the SPDEs according to E. Pardoux, N. Krylov et al. (1972) allows us to consider nonlinear problems like the stochastic p-Laplace equation. For the time stepping analysis we use techniques developed by R.H. Nochetto, G. Savaré, C. Verdi for deterministic evolution equations and combine them with the appraoch from the time stepping analysis of multi-valued SODEs from M. Eisenmann, M. Kovacs, R. Kruse and S. Larsson. Furthermore, we apply the Galerkin method to arrive at a fully discrete scheme.