STOCHASTIC DE GIORGI ITERATION AND REGULARITY OF STOCHASTIC PARTIAL DIFFERENTIAL EQUATIONS

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Abstract: We consider uniformly elliptic stochastic partial differential equation with progressively measurable random diffusion coefficients. The traditional method is not suitable for treating this type of SPDEs. De Giorgi iteration is a well known method for elliptic PDEs with measurable coefficients. We discuss a stochastic version of this method and show that it is very well adapted to SPDEs with random diffusion coefficients. We illustrate this method by showing almost sure Holder regularity of solutions of a class of SPDEs.