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ERRATUM

Erratum to: Rough Burgers-like equations with multiplicative noise

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Unfortunately, the proof of Proposition 4.8 in the original article is not correct. In fact, equation (4.60), where R^θ is rewritten as a stochastic integral, has no meaning because the integrand is not adapted. Hence in (4.61) we are not allowed to apply the Burkholder–Davies–Gundy inequality.

The argument was corrected in [1, Lemma 3.6 and Corollary 3.7] in a more complicated situation. In order to transfer these statement to the situation in the original article some small changes are needed. First of all, the regularity of the linearised process X should be measured in a Hölder norm with slightly bigger index $\alpha_\star$ than the solution u. This can be done without further problems. With this change, the definition of the stopping time τ_K^X in (4.53) should be replaced by the following.

For $K > 0$ *and for an* $\alpha_\star \in (\alpha, 1/2)$ *we introduce the stopping time*

$$\tau_K^X = \inf\left\{ t \in [0,T]\colon \sup_{\substack{x_1 \neq x_2 \\ 0 \le s_1 < s_2 \le t}} \frac{\big|X(s_1,x_1) - X(s_2,x_2)\big|}{|s_1 - s_2|^{\alpha_\star/2} + |x_1 - x_2|^{\alpha_\star}} > K \right\}. \qquad (1)$$

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With this changed definition, Lemma 3.6 of [1] implies, in the notation of the original article, the following result.

Lemma 1 *Suppose that* $0 < \alpha < \alpha_\star < \frac{1}{2}$ *and let* τ *be a stopping time that almost surely satisfies*

$$0 \le \tau \le \tau_K^X \wedge T.$$

For every $0 \le t \le T$ *we set*

$$\begin{aligned}
\tilde\theta(t) &:= \theta(t \wedge \tau),\\
\tilde\Psi^\theta(t) &:= \int_0^{t\wedge\tau} S(t-r)\,\tilde\theta(r)\,dW(r),\\
\tilde X(t) &:= \int_0^{t\wedge\tau} S(t-r)\,dW(r),\\
\tilde R^\theta(t;x,y) &:= \delta\tilde\Psi^\theta(t;x,y) - \tilde\theta(t,x)\,\delta\tilde X(t;x,y).
\end{aligned}$$

Then, for any p *large enough and for any* $\gamma > 0$ *such that*

$$\gamma < \alpha_\star + \alpha - \frac{1}{p} - \sqrt{\frac{1}{2p}(1+\alpha-\alpha_\star)},$$

the following bound holds true:

$$\sup_{0<t\le T} \mathbb{E}\big|\tilde R^\theta(t)|^p_{\Omega\mathcal{C}^\gamma} \lesssim |||\theta|||^p_{p,\alpha}. \tag{2}$$

The statement given here is actually slightly stronger than the bound stated in [1] because the norm appearing on the left hand side of (2) is bounded uniformly in t instead of allowing a blow up near 0. In [1] we had to introduce this blowup due to a slightly modified definition of the Gaussian process X: the process used in [1] does not start at 0, but with stationary initial condition, which was convenient for other reasons. When going through the proof given in [1], one realises that when considering the process with zero initial condition, one can apply bound (3.74) for all times t and there is no need to use (3.75) for small times.

Based on this version of Lemma 1, it is then straightforward to use the a priori information on the time regularity of R^θ, combined with the fact that the "tilde" processes coincide with the "non-tilde" processes before time τ, to obtain the bound

$$\mathbb{E}\Big[\big\|R^\theta\big\|^p_{C^\kappa([0,\tau];\Omega C^{2\alpha})}\Big] \le C(K,T)|||\theta|||^p_{p,\alpha},$$

for sufficiently small values of κ and sufficiently large values of p, as required.

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Reference

1. Hairer, M., Maas, J., Weber, H.: Approximating rough stochastic PDEs (arXiv e-prints)