Erratum to: An L_p-theory of Stochastic PDEs of Divergence Form on Lipschitz Domains

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Abstract The purpose of this erratum is to correct the assumptions in Theorem 2.10 of [2] (Kim in J Theor Probab 22:220–238, 2009).

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Theorem 2.10 of [2] should be corrected as follows. The point here is that condition (0.1) below is stronger than the one assumed in [2].

Theorem 0.1 *Let $p \in [2, \infty)$ and Assumptions 2.1, 2.3, 2.4, 2.7 and 2.8 be satisfied. There exists $\kappa = \kappa(\delta_0, p, d, K) \in (0, 1)$ such that if*

$$d - 2 + p - \kappa < \theta < d - 2 + p + \kappa \qquad (0.1)$$

then for any $f \in \psi^{-1}\mathbb{H}_{p,\theta}^{-1}(\mathcal{O}, \tau)$, $f^i \in \mathbb{L}_{p,\theta}(\mathcal{O}, \tau)$, $g \in \mathbb{L}_{p,\theta}(\mathcal{O}, \tau)$ and $u_0 \in U_{p,\theta}^1(\mathcal{O})$, Eq. (1.1) with initial data u_0 has a unique solution $u \in \mathfrak{H}_{p,\theta}^1(\mathcal{O}, \tau)$, and for this solution

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$$\|u\|_{\mathfrak{H}^1_{p,\theta}(\mathcal{O},\tau)} \le N \left(\|\psi f\|_{\mathbb{H}^{-1}_{p,\theta}(\mathcal{O},\tau)} + \|f^i\|_{\mathbb{L}_{p,\theta}(\mathcal{O},\tau)} + \|g\|_{\mathbb{L}_{p,\theta}(\mathcal{O},\tau)} + \|u_0\|_{U^1_{p,\theta}(\mathcal{O})} \right),$$

$$(0.2)$$

where $N = N(d, p, \delta_0, K, T, \mathcal{O})$.

In Theorem 2.10 of [2], in place of (0.1), the weaker condition

$$d - \kappa < \theta < d - 2 + p + \kappa \qquad (0.3)$$

is assumed.

The error of the proof of [2, Theorem 2.10] occurred because it relied on a result proved in [3, Theorem 2.1], which is related to non-divergence type SPDE. The result of [3, Theorem 2.1] is proved for the range of θ satisfying (0.3), but it turns out that [3, Theorem 2.1] is false unless much stronger restriction on θ is assumed (see [1] for details).

Theorem 2.1 of [3] is corrected in [1, Theorem 2.12] for θ satisfying (0.1). Thus the proof of Theorem 2.10 of [2] goes throughout without any change if condition (0.1) is assumed.

References

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