Erratum to: Quantitative estimates of the threshold phenomena for propagation in reaction diffusion equations*

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We are very grateful to Grégoire Nadin for bringing the following issue in the work [1] to our attention : since it lacks regularity, the function $w = w(t,x)$ defined in (3.5) cannot be the solution to the reaction diffusion equation (3.2).

Nevertheless, by replacing Assumption 1.1 in [1] by the slightly stronger Assumption 0.1, our results remain valid.

Assumption 0.1 (Nonlinearity f). *Let Assumption 1.1 of [1] hold. In the bistable case, assume further that there are $r^- > 0$ and $\delta^- \in (\theta, 1)$ such that*

$$f(u) \geq r^- (u - \theta), \ \forall u \in [0, \delta^-]. \tag{0.1}$$

By requiring (0.1) to hold on $[0, \delta^-]$ (and not only on $[\theta, \delta^-]$ as in (1.8) in [1]), we can replace the piecewise linear function $h = h(w)$ in (3.1) by the linear function $h(w) = r^-(w - \theta)$. In other words $r_0 = r^-$ and, now, $w = w(t,x)$ in (3.5) is the solution to the reaction diffusion equation (3.2). The rest of the proof is exactly the same.

Last, notice that, despite the additional requirement (0.1), the usual cubic bistable nonlinearity $(r > 0)$

$$f(u) = ru(u - \theta)(1 - u)\mathbf{1}_{(0,1)}(u),$$

still satisfies Assumption 0.1 as soon as $\theta < \frac{1}{2}$.

REFERENCES

[1] M. Alfaro, A. Ducrot and G. Faye, Quantitative estimates of the threshold phenomena for propagation in reaction-diffusion equations, SIAM Journal on Applied Dynamical Systems 19 (2020), 1291-1311.

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