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ERRATUM: "PROPAGATION OF CHAOS IN NEURAL FIELDS" [*Ann. Appl. Probab.* **24** (2014) 1298–1328]

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This erratum indicates an erroneous proposition of expansion of the results in Appendix B of the paper [4] *Propagation of chaos in neural fields*, where possible extensions are announced of the result proved in the main text to less regular equations (namely, with nonglobally Lipschitz-continuous dynamics). We also provide here an equivalent representation of the law of the spatially extended McKean–Vlasov limit at each space location that simplifies measurability considerations.

Extension to nonglobally Lipschiz-continuous drifts. In [4], we demonstrate the convergence of a spatially extended neural network toward a mean-field equation under the assumption that the coefficients of each element's dynamics is globally Lipschitz-continuous (Assumption H1, page 1303). This setting is valid for a number of models in neuroscience, as discussed in Appendix A.

We proposed possible extensions of this results to models with nonglobally Lipschitz continuous drifts in Appendix B; however, the assumptions provided in the Appendix are too weak and extending the results under those assumptions is not valid. Indeed, existence and uniqueness of the limit not generally ensured for McKean–Vlasov diffusions with nonglobally Lipschitz continuous drifts, and counterexamples to the uniqueness were constructed by Scheutzow [3] (cited in this context in [1]). In this paper, the author indeed exhibits two McKean–Vlasov diffusions with very specific locally-Lipschitz drifts (constructed through infinite series of functions) that have at least two solutions. Therefore, assuming only local Lipschitz-continuity of the drift in a McKean–Vlasov diffusion is not enough to prove existence and uniqueness of solutions.

In cases arising in neuroscience, there is essentially one model that does not satisfy assumption (H1), the Fitzhugh–Nagumo (FhN) neuronal network model [equation (14) in Appendix A], for which each neuron has a dynamics characterized by a cubic drift. For this particular system, it was recently shown, in a setting similar to [4] but with nonspatial interactions and no delay, that there exists a unique solution to the associated McKean–Vlasov diffusion [1, 2]. The two contributions solve this problem using distinct methodologies: [1] is based on probability theory, and [2] uses functional analysis techniques. In the latter case, we

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