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# Regularization of Multiplicative SDEs through additive noise

We will discuss the regularizing effect of certain additive continous perturbations on SDEs with multiplicative fractional Brownian motion with $H > 1/2$. Traditionally, a Lipschitz requirement on the drift and diffusion coefficients is imposed to ensure existence and uniqueness of the SDE. We show that suitable perturbations restore existence, uniqueness and regularity of the flow for the resulting equation, even when both the drift and the diffusion coefficients are distributional, thus extending the program of regularization by noise to the case of multiplicative SDEs. Our method relies on a combination of the non-linear Young formalism developed by Catellier and Gubinelli, and stochastic averaging estimates recently obtained by Hairer and Li.

This talk is based on a joint work with Lucio GALEATI (university of Bonn), and a preprint is available at `arXiv:2008.02335`.