STABILITY AND MOMENT ESTIMATES FOR SPDES WITH SINGULAR DRIFT IN DIVERGENCE FORM

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In this talk, we shall discuss long-time behavior of SPDEs with singular nonlinear divergence-type drift subject to an additive perturbation by Gaussian noise [3]. Examples include the stochastic singular p-Laplace equation, the multi-valued stochastic total variation flow and the stochastic curve shortening flow. We obtain some new pathwise regularity results, improved moment estimates and quantitative convergence rates of the ergodic semigroup to the unique invariant measure [2], classified in a systematic way according to the degree of local degeneracy of the potential at the origin. We obtain new concentration results for the invariant measure and establish maximal dissipativity of the associated Kolmogorov operator. In particular, we recover the results for the stochastic curve shortening flow in the plane by Es-Sarhir, von Renesse and Stannat [1].

REFERENCES

[1] A. Es-Sarhir, M.-K. von Renesse, and W. Stannat. Estimates for the ergodic measure and polynomial stability of plane stochastic curve shortening flow. *NoDEA*, 19(6):663–675, 2012.

[2] B. Gess and J. M. Tölle. Ergodicity and local limits for stochastic local and nonlocal p-Laplace equations. *SIAM J. Math. Anal.*, 48(6):4094–4125, 2016.

[3] F. Seib, W. Stannat and J. M. Tölle. Stability and moment estimates for the stochastic singular Φ-Laplace equation. *Preprint*, 1–23, 2021, https://arxiv.org/abs/2103.03194.

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