Suppression of singularities by noise in simplified models of fluid mechanics

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Starting from the paper [1] we understood some mechanism by which noise could interact with singularities of PDEs; see also [2]. The talk will be mainly concentrated on [3] where it is shown that noise may prevent infinite stretching of passive vector fields, like a magnetic field, driven by a random velocity field.

References

[1] E. Fedrizzi, F. Flandoli, Noise prevents singularities in linear transport equations, *J. Funct. Anal.* **264**, no. 6, 1329–1354 (2013).

[2] F. Delarue, F. Flandoli, D. Vincenzi, Noise prevents collapse of Vlasov-Poisson point charges, to appear on Comm. Pure Appl. Math.,

[3] F. Flandoli, M. Maurelli, M. Neklyudov, Noise prevents infinite stretching of the passive field in a stochastic vector advection equation, arXiv:1403.0022.