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Yuanyuan Feng* (yzf58@psu.edu), State College, PA 16802, and **Gautam Iyer, Jean-Luc Thiffeault** and **Yu Feng**. *Dissipation enhancement by mixing and suppression of phase separation.*

We quantitatively study the interaction between diffusion and mixing in both the continuous, and discrete time setting. In discrete time, we consider a mixing dynamical system interposed with diffusion. In continuous time, we consider the advection diffusion equation where the advecting vector field is assumed to be sufficiently mixing. We then study the additive Cahn-Hilliard equation. We prove that when the flow is sufficiently mixed, phase separation will be prevented. (Received January 12, 2020)