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Alex Blumenthal, Jinxin Xue and Lai-Sang Young* (lsy@cims.nyu.edu). *Lyapunov exponents and correlation decay for random perturbations of some prototypical 2D maps.*

To illustrate the more tractable properties of random dynamical systems, we consider a class of 2D maps with strong expansion on large – but non-invariant – subsets of their phase spaces. In the deterministic case, such maps are not precluded from having sinks, as derivative growth on disjoint time intervals can be cancelled when stable and unstable directions are reversed. Our main result is that when randomly perturbed, these maps possess positive Lyapunov exponents commensurate with the amount of expansion in the system. We show also that initial conditions converge exponentially fast to the stationary state, equivalently time correlations decay exponentially fast. These properties depend only on finite-time dynamics, and do not involve parameter selections, which are necessary for deterministic maps with nonuniform derivative growth. (Received March 15, 2017)