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Switching and control in stochastic double gyres LORA BILLINGS, Montclair State University, ERIC FORGOSTON, IRA SCHWARTZ, Naval Research Lab — We consider the problem of stochastic transport in a driven double gyre with time dependent basin boundaries. Noise typically creates almost invariant sets, or meta-stable states. Mixing occurs between these states as a result of stochastic transport. Using stochastic Markov operator theory, we approximate the almost invariant sets and regions with most probable switching. These sets define regions for which control perturbations can facilitate or prevent switching. Switching rates using these control schemes will be derived and compared to numerical simulations. We show how scaling laws change exponentially in the presence of control when compared to the natural switching rate.

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