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Mickaël D. Chekroun*, Department of Atmospheric and Oceanic Science, Maths Science Building, 520 Portola Plaza, Los Angeles, CA 90095. *Stochastic Dynamic Transitions for Stochastic Evolution Equations*. Preliminary report.

Stochastic partial differential equations (SPDEs) and stochastic delay differential equations (SDDEs), driven by a multiplicative noise, will be considered. For such equations, we will present new analytic formulas for Markovian as well as non-Markovian parameterizations of the scales lying beyond a cutoff wavenumber. Applications to the study of dynamic transitions arising in the presence of noise will be shown on a stochastic Cahn Hilliard equation and on an SDDE arising in the modeling of the El Niño-Southern Oscillation.

(Joint work with Honghu Liu (Virginia Tech.) and Shouhong Wang (Indiana University))

References

- Chekroun, M. D., H. Liu, and S. Wang, 2015: Approximation of Stochastic Invariant Manifolds: Stochastic Manifolds for Nonlinear SPDEs I. Springer Briefs in Mathematics, Springer, New York.
- Chekroun, M. D., H. Liu, and S. Wang, 2015: Stochastic Parameterizing Manifolds and Non-Markovian Reduced Equations: Stochastic Manifolds for Nonlinear SPDEs II. Springer Briefs in Mathematics, Springer, New York.
- Chekroun, M. D., M. Ghil, H. Liu and S. Wang, 2016: Low-dimensional Galerkin approximations of nonlinear delay differential equations, DCDS A, **36**, 4133–4177.

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