Geophysical Research Abstracts
Vol. 13, EGU2011-9930, 2011
EGU General Assembly 2011

Stochastic model reduction on manifolds

Georg Gottwald (1) and David Lewis (2)

(1) The University of Sydney, Australia (georg.gottwald@sydney.edu.au), (2) The University of Sydney, Australia (david.lewis314@gmail.com)

This talk presents first results on how to do stochastic subgrid scale parametrization for a deterministic system with some underlying conservation laws such as energy conservation. We introduce the problem, and then consider a time scale separated Hamiltonian toy model where fast unresolved chaotic dynamics will be modeled by noise in such a way as to preserve the energy conservation of the full deterministic system. The reduction is done in two stages: First projecting the noise onto the energy manifold, and then subsequently performing singular perturbation theory.