1092-35-380 **Mickaël D. Chekroun**, Department of Atmospheric & Oceanic Sciences, University of California, Los Angeles, CA 90095, **Michael Ghil**, Department of Atmospheric & Oceanic Sciences, University of California, Los Angeles, CA 90095, **Honghu Liu*** (hliu@atmos.ucla.edu), Department of Atmospheric & Oceanic Sciences, University of California, Los Angeles, CA 90095, and **Shouhong Wang**, Department of Mathematics, Indiana University, Bloomington, IN 47405.

On approximation formulas of stochastic invariant manifolds.

In this talk, we present explicit analytic formulas for the leading-order Taylor approximation of stochastic invariant manifolds associated with a broad class of stochastic partial differential equations (SPDEs) driven by linear multiplicative white noise. The focus will be on stochastic critical manifolds that are built naturally as graphs over a fixed number of critical modes, which lose their stability as the system control parameter λ varies. Results for stochastic hyperbolic manifolds will also be mentioned.

An interesting and practically useful pullback characterization of the approximating manifolds will be presented by Mickaël D. Chekroun in this session, where a general analytic stochastic-reduction procedure based on the approximation formulas will also be shown, and the efficiency of the reduction will be demonstrated on a stochastic Burgers-type equation.

This is a joint work with Mickaël D. Chekroun, Michael Ghil, and Shouhong Wang. (Received August 14, 2013)