1019-60-113 **Frederi G Viens*** (viens@purdue.edu). *Malliavin derivatives, supremum analysis, and Lyapunov exponents for stochastic PDEs.* Preliminary report.

We present a novel, simple way of identifying sub-Gaussian random variables and fields, and provide applications to the sharpest estimates to date for the large-time exponential behavior of the linear multiplicative stochastic heat equation, i.e. the almost-sure Lyapunov exponents for the stochastic Anderson model in continuous space. We also discuss the same problem for an Anderson model with medium-range- or long-range-dependent noise in time, and for a related polymer model in a large-temperature regime.

Malliavin derivaties are used to establish sub-Gaussian concentration; the method should be extendable far beyond this type of tail decay. Quantitative estimates are obtained via sub-Gaussian supremum analysis, both "by hand" and using Dudley-type results, by bounding the expected logarithm of the Anderson model above and below; they should also be easily generalizable. After 15 years of research, we believe the essentially disjoint combination of these two ingredients is the most efficient for SPDE Lyapunov exponent estimation, as it best connects such exponents to the driving noise's spatial regularity.

This talk presents joint work with I. Florescu, S. Bezerra and S. Tindel, A. Vizcarra, and T. Zhang. (Received August 10, 2006)