Abstract: In this talk, we will present a recent joint work with Dr. Nicholas Eisenberg (arXiv:2209.04771). This paper deals with the long term behavior of the solution to the nonlinear stochastic heat equation \( \partial u / \partial t - \frac{1}{2} \Delta u = b(u) \dot{W} \), where \( b \) is assumed to be a globally Lipschitz continuous function and the noise \( \dot{W} \) is a centered and spatially homogeneous Gaussian noise that is white in time. Using the moment formulas obtained in Chen & Kim [10] and Chen & Huang [9], we identify a set of conditions on the initial data, the correlation measure and the weight function \( \rho \), which will together guarantee the existence of an invariant measure in the weighted space \( L^2(\mathbb{R}^d) \). In particular, our result includes the parabolic Anderson model (i.e., the case when \( b(u) = \lambda u \)) starting from the Dirac delta measure.

Monday, October 3 at 4:00 PM in 1227 SEO