1139-60-367 **Hung Nguyen*** (hnguye25@tulane.edu). *Anomalous diffusion and the Generalized Langevin Equation.*

The Generalized Langevin Equation is commonly used to describe the velocity of microparticles in viscoelastic fluids. Formally, the Generalized Langevin Equation (GLE) is written

$$m\ddot{x}(t) = -\gamma\dot{x}(t) - \Phi'(x(t)) - \int_{-\infty}^{t} K(t-s)\dot{x}(s)ds + F(t) + \sqrt{2\gamma}\dot{W}(t)$$

where $\Phi(x)$ is a non-linear potential well, $W(t)$ is a Brownian motion, and $F(t)$ is a stationary, mean zero and Gaussian process satisfying $E(F(t)F(s)) = K(t-s)$. Describing the long-term behavior of sub-diffusive GLEs in non-linear potentials is a long-standing open problem. We will look at recent advances in establishing existence and uniqueness of a stationary distribution for an infinite-dimensional Markov representation of the GLE. If time permits, we will also discuss asymptotic behaviors of the GLE in different limits, namely, the small-mass limit and the white noise limit. (Received February 16, 2018)