1124-60-149 **Katherine A Newhall***, Phillips Hall, Chapel Hill, NC 27599-3250. *Metastability of the Nonlinear Wave Equation.*

I will discuss the long-time dynamics of the nonlinear wave equation in one-space dimension, with stochastic initial data. When the nonlinearity is a double-welled potential, the infinite energy solutions not only preserve a natural Gibbsian invariant measure, they can also display metastability due to the existence of two small disjoint sets that contain most of the system's measure. I will quantify this phenomenon by calculating exactly via transition state theory (TST) the mean frequency at which the solutions cross a dividing surface lying in between the metastable sets. Numerical results suggest that the dynamics of the nonlinear wave equation is ergodic and rapidly mixing with respect to the Gibbs invariant measure when the wave-speed parameter is small enough. For larger parameter values, the dynamics either stops being ergodic, or its mixing time becomes larger than the inverse of the TST frequency, indicating that successive transitions between the metastable sets are correlated and the coarse-graining to a Markov chain fails. (Received September 06, 2016)