MARK DEMERS, Fairfield University

Escape rates and limiting distributions for intermittent maps with holes

Dynamical systems with holes model systems in which mass or energy is allowed to escape over time and have attracted much attention over the last ten years. Typically, one starts with a closed system and declares a subset of the phase space to be the 'hole,' essentially an absorbing set. To date, most published works focus on systems in which the rate of mixing, and thus the rate of escape, are exponential. This talk will investigate a class of polynomially mixing systems with holes which exhibit qualitatively different behavior from exponentially mixing systems; this behavior can be characterized as a loss of stability from the point of view of the absolutely continuous invariant measure for the closed system. By varying the potential of the associated transfer operator in this family, we are able to classify three distinct regimes with different limiting behaviors based on a relation between the rate of mixing and the rate of escape. Finally, we attempt to recover some notion of stability via the measures supported on the survivor set of the open system, even when no limiting absolutely continuous conditionally invariant measure exists. This is joint work with Bastien Fernandez, CNRS, and Mike Todd, St. Andrews.