Titel: Exponential attractors for non-autonomous infinite dimensional dynamical systems

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Abstract:

The longtime dynamics of infinite dimensional dynamical systems can often be reduced to the dynamics on the global attractor. The global attractor is a compact, strictly invariant set that attracts all bounded subsets of the phase space. Since the rate of convergence is usually unknown and the global attractor is generally not stable under perturbations, the notion of an exponential attractor was introduced. Exponential attractors are compact, finite dimensional subsets that contain the global attractor and attract all bounded subsets at an exponential rate.
The theory of exponential attractors was recently extended to non-autonomous problems. We present a general existence result for exponential attractors of non-autonomous infinite dimensional dynamical systems and derive estimates on their fractal dimension. Two examples are considered, where previous results do not apply: a non-autonomous Chafee-Infante equation and a semilinear damped wave equation with time-dependent damping term.
Finally, we mention possible extensions of the theory to random dynamical systems.