Boundary Approximation of Deterministic and Random Attractors for Gradient SDEs*

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Abstract

A result on the boundary of omega-limit sets, $\partial\Omega_B \subseteq \Omega_{\partial B}$, is shown and used to prove that boundaries of deterministic and random attractors are covered by omega-limit sets of boundaries of compact sets. As a consequence, a simple algorithm is given to compute the boundary of the attractor for a class of gradient SDEs with additive noise. The algorithm reveals similar behaviour to that which is already known for one-dimensional systems: the introduction of additive white noise causes the attractor to collapse to a single point. Some analytical results in this direction are discussed.

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*oral communication.