The Relationship between Pullback, Forward and Global Attractors of Nonautonomous Dynamical Systems

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Abstract: Various types of attractors are considered and compared for nonautonomous dynamical systems involving a cocycle state space mapping that is driven by an autonomous dynamical system on a compact metric space. In particular, conditions are given for a uniform pullback attractor of the cocycle mapping to form a global attractor of the associated autonomous skew-product semi-dynamical system. The results are illustrated by several examples that are generated by differential equations on a Banach space with a uniformly dissipative structure induced by a monotone operator.

Keywords: *Nonautonomous dynamical system; skew-product flow; pullback attractor; global attractor; asymptotical stability; nonautonomous Navier-Stokes equation.*

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