

REDUCTION PRINCIPLES FOR ATTRACTORS IN GENERAL EVOLUTIONARY SYSTEMS

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The attractor property of a closed, invariant set M is proved under the conditions that a closed invariant subspace of the state space is attractive and weakly attracted by M . An analogous reduction theorem is presented for stable attractors (asymptotic stability). The theory is developed in the context of a neighborhood space with axioms defining a pretopology. Uniqueness is not required; only upper semi-continuity with respect to initial conditions is assumed. The time scale is an ordered Abelian semigroup. All concepts are defined as relations between quasifilters. As an example for the applications to systems in infinite-dimensional spaces a pair of coupled diffusion equations with Dirichlet and Neumann boundary conditions, respectively, is analyzed.

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