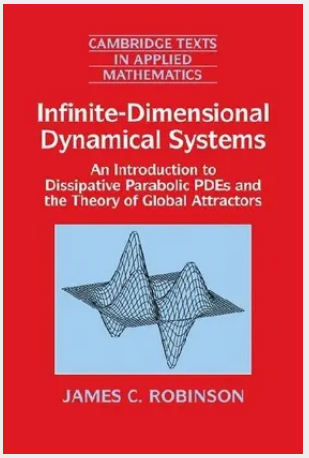
Robinson

Infinite-Dimensional Dynamical Systems

An Introduction to Dissipative Parabolic Pdes and the Theory of Global Attractors

This book develops the theory of global attractors for a class of parabolic PDEs which includes reaction-diffusion equations and the Navier-Stokes equations, two examples that are treated in detail. A lengthy chapter on Sobolev spaces provides the framework that allows a rigorous treatment of existence and uniqueness of solutions for both linear time-independent problems (Poisson's equation) and the nonlinear evolution equations which generate the infinite-dimensional dynamical systems of the title. Attention then switches to the global attractor, a finite-dimensional subset of the infinite-dimensional phase space which determines the asymptotic dynamics. In particular, the concluding chapters investigate in what sense the dynamics restricted to the attractor are themselves 'finite-dimensional'. The book is intended as a didactic text for first year graduates, and assumes only a basic knowledge of Banach and Hilbert spaces, and a working understanding of the Lebesgue integral.

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