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Stability in nonlinear evolution problems by means of fixed point theorems

Comment.Math.Univ.Carolinae 38,1 (1997) 37-59.

Abstract: The stabilization of solutions to an abstract differential equation is investigated. The initial value problem is considered in the form of an integral equation. The equation is solved by means of the Banach contraction mapping theorem or the Schauder fixed point theorem in the space of functions decreasing to zero at an appropriate rate. Stable manifolds for singular perturbation problems are compared with each other. A possible application is illustrated on an initial-boundary-value problem for a parabolic equation in several space variables.

Keywords: evolution equations, stabilization of solutions, parabolic problem

AMS Subject Classification: 34G20, 35B40, 35K20