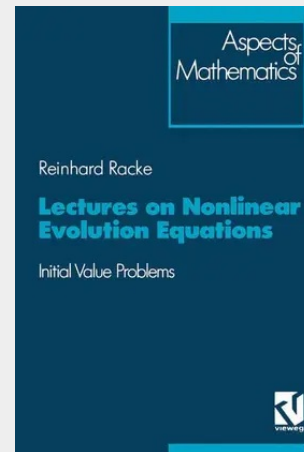


Lectures on Nonlinear Evolution Equations

Initial Value Problem

The book in hand is based on lectures which were given at the University of Bonn in the winter semesters of 1989/90 and 1990/91. The aim of the lectures was to present an elementary, self-contained introduction into some important aspects of the theory of global, small, smooth solutions to initial value problems for non linear evolution equations. The addressed audience included graduate students of both mathematics and physics who were only assumed to have basic knowledge of linear partial differential equations. Thus, in the spirit of the underlying series, this book is intended to serve as a detailed basis for lectures on the subject as well as for self-studies for students or for other newcomers to this field. The presentation of the theory is made using the classical method of continuation of local solutions with the help of apriori estimates obtained for small data. The corresponding global existence theorems have been proved mainly in the last decade, focussing on fully nonlinear systems; Related questions concerning large data problems, the existence of weak solutions or the analysis of shock waves are not discussed. Also the question of optimal regularity assumptions on the coefficients is beyond the scope of the book and is touched only in part and exemplarily.

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