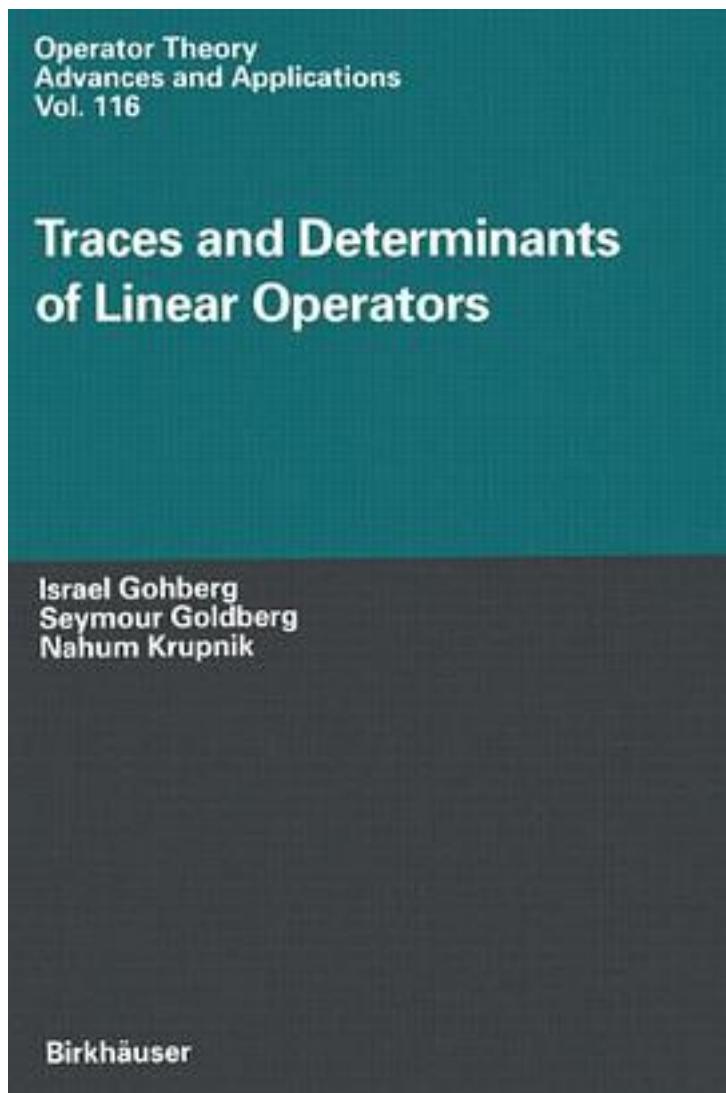


Traces and Determinants of Linear Operators



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This book is dedicated to a theory of traces and determinants on embedded algebras of linear operators, where the trace and determinant are extended from finite rank operators by a limit process. All the important classical examples of traces and determinants suggested by Hill, von Koch, Fredholm, Poincaré, Ruston and Grothendieck are exhibited in particular, the determinants which were first introduced by Hill and Poincaré in their investigations of infinite systems of linear equations stemming from problems in celestial mechanics are studied most of Fredholm's seminal results are presented in this book. Formulas for traces and determinants in a Hilbert space setting are readily derived and generalizations to Banach spaces are investigated. A large part of this book is also devoted to generalizations of the regularized determinants introduced by Hilbert and Carleman. Regularized determinants of higher order are presented in embedded algebras. Much attention is paid to integral operators with semi-separable kernels, and explicit formulas of traces and determinants are given. One of the conclusions of this book (based on results of Ben-Artzi and Perelson) is that the trace and determinant, which are considered here, essentially depend not only on the operator but also on the algebra containing this operator. In fact, it turns out that by considering the same operator in different algebras, the trace and determinant of non nuclear operators can be almost any complex number. However, an operator is invertible if and only if each determinant is different from zero. Also each of the determinants can be used in the inversion formula. An attractive feature of this book is that it contains the charming classical theory of determinants together with its most recent concrete and abstract developments and applications. The general presentation of the book is based on the author's work. This monograph should appeal to a wide group of mathematicians and engineers. The material is self-contained and may be used for advanced courses and seminars.

作者介绍:

目录:

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