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# **Topics In Matrix Analysis**



ROGER A. HORN AND CHARLES R. JOHNSON



## **Synopsis**

Building on the foundations of its predecessor volume, Matrix Analysis, this book treats in detail several topics with important applications and of special mathematical interest in matrix theory not included in the previous text. These topics include the field of values, stable matrices and inertia, singular values, matrix equations and Kronecker products, Hadamard products, and matrices and functions. The authors assume a background in elementary linear algebra and knowledge of rudimentary analytical concepts. The book should be welcomed by graduate students and researchers in a variety of mathematical fields both as an advanced text and as a modern reference work.

#### **Book Information**

Paperback: 616 pages

Publisher: Cambridge University Press (June 24, 1994)

Language: English

ISBN-10: 0521467136

ISBN-13: 978-0521467131

Product Dimensions: 6 x 1.4 x 9 inches

Shipping Weight: 2.2 pounds (View shipping rates and policies)

Average Customer Review: 4.2 out of 5 stars Â See all reviews (4 customer reviews)

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### **Customer Reviews**

Horn and Johnson's MATRIX ANALYSIS AND TOPICS IN MATRIX ANALYSIS are true classics (like Knuth's Art of Computer Programming). You will find classic theorems and lemmas in matrix theory and linear algebra here along with their proofs (some of these are not found elsewhere). TOPICS IN MATRIX ANALYSIS contains a lot of stuff including LMI's, Kronecker and Hadamard products of matrices and their properties etc. I found this book indispensible when I was studying Semidefinite Programming. Both these books are now available in paperback (cost around 30+) dollars each. I have recently purchased both copies and can only strongly recommend them to anyone else.

My rating refers to the quality of the printing, which is not good. For example, it is often impossible to distinguish the symbols \$\otimes\$ and \$\oplus\$. This book has been printed after being transferred to digital format. I compared my copy with a slightly older printing from the library, and the difference is obvious. It is amazing that major publishers don't check the quality of their scannings. (I've also seen a book published by AMS with similar problems.)

This book is an excellent reference for researchers in the fields of Matrix Analysis, Numerical Analysis, Theoretical Linear Algebra, etc. I am doing currently some research involving Matrix functions and generalizations of M-matrices and I use this book all the time. Some important features of this book include the facts that 1) it is well-written 2) It is clear 3) It very useful to researchers and graduate students. It is one of those books which you can't stop reading once you start.

If you are communication engineer and exploring the world of channel estimation, MIMO, etc. and you need to understand the mathematical approach, you need this book. The book covers the SVD issue, which is most important for many applications.

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