Comments on

Applied Linear Algebra

by Carl de Boor

This author is a well-known mathematician with a strong track record of research in several fields of mathematics. He presents a deeply considered and highly unusual introduction to linear algebra. This book will go down as a classic. Researchers in mathematics are likely to use it as a reference. It should be in every university library to inform teachers of linear algebra.

Yet I do not see that this book is suitable for any university course except one for the very best students. In theory it could be used in a second course in linear algebra. But this would require rebuilding linear algebra from the ground up and that is rarely the purpose of such a course. Also, a student brought up on this book would have major difficulty communicating with others familiar with a more traditional approach to linear algebra. The obstacle lies in the nature of de Boor's definitions of the basic concepts of linear algebra, for example, the introduction of a basis as a map (p.45). As a consequence some simple results might seem mysterious to (say) an engineer who has met them in a different form, see for instance results on rank factorization (p.84).

It is conceivable that disciples will develop de Boor's approach to make it easily accessible to elementary students. Thus this book may eventually achieve recognition by college teachers. But at this time I would urge its publication as a monograph

which contributes to the understanding of linear algebra. It is simultaneously elementary and sophisticated. Surely it will find a wider audience than some of the valuable specialized mathematical monographs published by Springer.

I have one quibble: The title. True, there are applications in the last quarter of the book and scattered throughout the text. These are expertly done and appropriate to the current era of interest in computability. Nevertheless, the main impact of the book on me is its fresh view of this classical subject. I'd prefer the title "Linear Algebra".