asymptotic behavior of the operations count. In fact, the discussion does not lead to the general asymptotic formulas given. In the more general FFT algorithms, the algebraic manipulations obscure the basic simplicity of the FFT algorithm, particularly for students at the level for which the rest of the book is designed.

The chapter on convolution calculations is effectively given at the same level as the first part of the book. It is strange that no mention is made of applications of the methods to engineering problems.

Aside from the fact mentioned above, that it is hard to define the type of student for whom the book is really designed, it can be a good text book for engineering students at a fairly elementary level. However, the teacher would have to condense and abstract the essential parts of the algorithm from the chapters on the FFT algorithm, since an elementary student would not really have much need or use for the detail given here.

For the working scientist or engineer, however, who merely wants to learn to use the FFT algorithm, it may be more efficient to consult a few of the references on the subject.

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30 [7].—K. A. STROUD, *Laplace Transforms, Programmes and Solutions,* John Wiley and Sons, New York, 1973, x + 275 pp., 23 cm. Price $5.75 (paperbound).

The reviewer can do no better than to quote from the author's preface. "The purpose of this book is to provide a sound introductory course in the use of Laplace transforms in the solution of differential equations and in their application to technological situations. The course requires no previous experience of the subject, but some knowledge of the solution of simple differential equations by the classical methods is assumed. The book forms a topic module. It approaches the subject in a practical way and has been devised specifically for courses leading to (i) B. Sc. Degree in engineering and science subjects, (ii) Higher National Diploma and Higher National Certificate in technological subjects and courses of a comparable standard. The module is self-contained and can therefore be introduced into any appropriate year of such courses and by its nature is equally applicable for individual or class use. The text has been based on self-learning methods developed and extensively tested over the past ten years. In controlled post-tests, each of the programmes has consistently attained a success rating in excess of 80/80, i.e., after working through each programme at least 80 per cent of the students scored at least 80 per cent of the possible marks. The individual nature of the method, the ability of a student to progress at his own rate, the immediate assessment of responses and, above all, the complete involvement of the student, all result in high motivation and contribute significantly to effective learning."

The volume is divided into eight programs. Programs 1–4 develop use of the transforms to solve various types of differential equations. Programs 5–8 deal with the Heaviside unit step function, periodic functions and the impulse function. A set of worked examples provides an introduction to the application of transforms to engineering problems, and a concluding section includes a table of transforms and inverse transforms.

It appears that the volume is well suited for self-study. But the very nature of the approach inevitably results in its taking more space to present the material than a typical textbook designed for classroom instruction. I feel that more material should have been covered—for example, application of transforms to solve partial differential equations and the integral representation for the inverse transform.

Y. L. L.

31 [8].—WILLARD H. CLATWORTHY, JOSEPH M. CAMERON & JANACE A. SPECKMAN, *Tables of Two-Associate-Class Partially Balanced Designs*, NBS Applied Mathematics Series 63, U.S. Government Printing Office, Washington, D.C., 327 pp., 26 cm. Price $3.45 (paperbound).

An extremely important problem in the design of experiments is the development of the capability of evaluating the significance of large numbers of variables and of estimating their effects, while maintaining control of the experimental error. To accomplish these purposes two broad classes of designs have been developed, known respectively as the Balanced Incomplete Block (BIB) and lattice designs. A major drawback to these designs consists of the constraints placed on the design configuration in terms of variables, blocks, and replicates. Owing to the resulting limitation on the number of ready-made designs of the BIB and lattice types, interest has developed in a broader class of designs that would remove these rather severe restrictions, to a large extent, while retaining most of the desirable features of the earlier designs. The underlying theory of the more general class of designs was developed by Bose & Nair [1]. These designs are called partially balanced incomplete block designs with m associate classes, and are designated as PBIB(m) designs.

The tables under review are new PBIBD(2) designs, representing the culmination of intensive research into combinatorial problems associated with experimental-design configurations studied since the publication of PBIBD(2) designs by Bose, Clatworthy and Shrikhande [2]. The present tables include more than 800 experimental designs of type $D(2)$ for which $2 \leqslant k \leqslant 10$ and $2 \leqslant r \leqslant 10$, where k is the number of experimental units in a block and r is the number of blocks in which each treatment appears.

Detailed explanations are given of the various means of accessing experimental designs to fit experimental situations. In Chapter III the reader is made fully aware of the models underlying the designs in the PBIBD(2) class. This chapter includes details of the computation required to develop the analysis of variance summaries, even to identifying the most appropriate schemes for the type of computer available.

However, this reviewer would have liked to see some sections directed at those not versed in the theory of statistical design, outlining in nontechnical terms the need for the new designs in preference to the customary ones.

This publication can be recommended as a necessary addition to the library of anyone fully qualified in the design of experiments.

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1. R. C. BOSE & K. R. NAIR, "Partially balanced incomplete block designs," *Sankhyā*, v. 4, 1939, pp. 337–372.

2. R. C. BOSE, W. H. CLATWORTHY & S. S. SHRIKHANDE, *Tables of Partially Balanced Designs with Two Associate Classes*, North Carolina Agricultural Experiment Station Technical Bulletin No. 107, Raleigh, North Carolina, 1954.