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Book reviews

Computational Techniques: Analog, Digital and Hybrid Systems, by Allen Durling, 1974; 403 pages. (*Intertext Educational*, Price £6·50)

This book provides a unified introduction to computation and simulation in which the relationships between analogue, digital and hybrid computer techniques are emphasised. As such it provides a very welcome addition to those texts dealing with computer methods for studying continuous system problems and other related topics. Some of the subjects introduced are of an advanced nature not usually encountered in an introductory text. Topics discussed include: analogue computing, numerical integration and digital simulation, use of state variables, digital filters, algebraic equations, hybrid techniques, boundary value and partial differential equations, parameter optimisation.

From the onset the solution of various equations by analogue and digital methods, and the likely errors to be involved, are given side by side. This unusual approach should certainly aid understanding of the essential characteristics of analogue and digital techniques for solving differential (and algebraic) equations.

The text, derived from a set of lectures for electrical engineering students, is clearly intended for university and college students. It does not form a complete course; students would need access to other material and exercises to fill in neglected areas, e.g. systematic preparation, checking and running of simulation problems. In his attempt to discuss many techniques, the author has failed to include some necessary material. Thus a number of end of chapter examples involve use of diodes and operational amplifiers but nowhere are these devices discussed. (This omission is of little consequence for electrical engineering students but could be important for others.) Other topics are discussed so briefly that they could be misleading. The treatment of electronic D/A switches (—zero resistance devices?) is a case in point (Fig. 5.10A).

Scaling, time and amplitude, of analogue problems is, in general, well described—brief and simple. However, the statement that when time scaling 'only the integrator gains are changed', 'pot settings . . . remain the same' is not quite true (page 74). It is the total gain associated with the integration process (i.e. pot settings plus integrator gains) that must be changed.

The text contains a surprisingly large number of typographical errors, none of them serious except for an unfortunate series of sign errors in relation to the discussion of Van der Pol's equation (pages 67, 68) which a student might well find confusing.

The book does not appear to contain any new problem: most of the techniques are applied to well known standard equations (Van der Pol's, Duffing's, Mathieu's, etc.) introduced with a minimum of discussion.

Despite these shortcomings the book is well worth consideration because of the interesting approach. It is particularly appropriate for fairly advanced students (final year, postgraduate) of physical science and engineering with good mathematical backgrounds.

J. STEPHENSON (Bradford)

R.P.G. Language and Techniques, by M. Kushner and Cynthia Zucker, 1974; 482 pages. (*John Wiley*, £5·50)

This book is based upon classroom experience over a period of seven years and is intended (as all books on RPG appear to be) for students with no previous programming experience. It follows the usual format for books of this kind, the first two chapters being devoted to a general review of computing equipment and the principles of problem analysis, and the remainder of the book introducing the features of the language in a natural sequence. There are plenty of examples, which it is claimed, have all been developed on a 360/30 system (a fact that has given the book something of a System-360 bias). There are also plenty of exercises and review questions.

It is natural to compare this work with the book by Harice Seeds on the same subject (also from Wiley); and it must be said that the latter is probably to be preferred as a class book if only because it is nearly £1·50 cheaper. Nevertheless, the book reviewed here is good value for money, and could provide useful additional material for the teacher. It has three full chapters on tape and disc processing, and some valuable advice (for the 360 user) on debugging. With so many hardback American books being priced out of reach of the ordinary student, Wiley are to be congratulated on their policy of bringing their programming manuals out in paperback.

G. EMERY (Aberystwyth)