

# Book Announcements

**SYDENHAM, P.H.**, editor, *Handbook of Measurement Science, Volume 1: Theoretical Fundamentals*. John Wiley and Sons, New York, 1982, 654 pages. \$69.95.

**Purpose:** This book is based on the premise that there exists an underlying collection of fundamentals that is applicable, in part or whole, to all measurement situations regardless of how diverse the applications appear to be. The contents are structured according to the philosophical sequence in which a measurement system is conceived, designed, constructed, installed, and maintained. Consequently, Volume 1 deals principally with the theoretical principles needed to design measurement systems, and Volume 2 is concerned with specific design, application and maintenance of measurement systems.

**Contents:** Theory and philosophy of measurement (L. Finkelstein). Measurements, models, and systems (P.H. Sydenham). Standardization of measurement fundamentals and practice (P.H. Sydenham). Signals and systems in the time and frequency domains (E.G. Woshni). Discrete signals and frequency spectra (M.J. Miller). Measurement errors, probability, and information theory (D. Hoffman). Pattern recognition (C.J.D.M. Verbeek). Parameter estimation (A. van den Bos). Analog signal filtering and processing (W.J. Kerwin). Filtering and processing of digital signals (A.G. Bolton). Signal-to-noise ratio improvement (D.M. Munroe). Signal data conversion (E.L. Zuch). Transmission of data (R.W. Grimes). Closed-loop systems (P. Atkinson). Index.

**SYDENHAM, P.H.**, editor, *Handbook of Measurement Science, Volume 2: Practical Fundamentals*. John Wiley and Sons, 1983. 758 pages. \$97.95.

**Purpose:** Same as Volume 1.

**Contents:** Physiology of measurement systems (P.H. Sydenham). Static and steady-state considerations (P.H. Sydenham). Measurement systems dynamics (P.H. Sydenham). Fundamentals of transducers: description by mathematical models (L. Finkelstein, R.D. Watts). Human factors in display design (D. Bosman). Measurement of electrical signals and quantities (L. Schnell). Mechanical regime of measuring instruments (W. Trylinski). Electrical and electronic regime of measuring instruments (P.H. Sydenham). Optical regime of measuring instruments (J. Prosad, G. Mitra). Transducer practice: displacement (P.H. Sydenham). Transducer practice: flow (T.J.S. Brain, K.A. Blake). Transducer practice: thermal (P.H. Sydenham). Transducer practice: chemical analysis (R.S. Watts). Design and manufacture of measurement systems (F.G. Peuscher). Quality control and inspection of products (E. Bronollo). Management of existing measurement systems (J.W. Hobson). Calibration, evaluation, and accreditation (P.H. Sydenham, T.P. Flanagan, E.K. Laskaris, J.A. Gilmour). Sources of information on measurement (P.H. Sydenham). Index.

**KANE, T.R.**, Stanford University, **LIKINS, P.W.**, Lehigh University, and **LEVINSON, D.A.**, Lockheed Missiles and Space Company, *Spacecraft Dynamics*. McGraw-Hill, New York, 1983, 436 pages. \$49.50.

**Purpose:** This book is intended for use both as a textbook in courses of instruction on the attitude dynamics of

spacecraft and as a reference work for engineers engaged in research, design, and development in this field.

**Contents:** Kinematics. Gravitational forces. Simple spacecraft. Complex spacecraft. Problem sets. Appendixes. Index.

**KANE, T.R.**, Stanford University, and **LEVINSON, D.A.**, Lockheed Missiles and Space Company, *Dynamics: Theory and Applications*. McGraw-Hill, New York, 1985, 379 pages. \$49.95.

**Purpose:** This book was written to equip a user with the analytical skills required to deal effectively with complex present-day dynamics problems such as those arising in connection with multibody spacecraft, robotics, and advanced machine design.

**Contents:** Differentiation of vectors. Kinematics. Mass distribution. Generalized forces. Energy functions. Formulation of equations of motion. Extraction of information from equations of motion. Problem sets. Appendix. Index.

**SCHWARZENBACH, J.** and **GILL, K.F.**, University of Leeds, *System Modelling and Control*. Edward Arnold, Baltimore, 1984, 322 pages. \$19.95.

**Purpose:** This is the second edition of a text originally published in 1978. It has been brought up to date by the addition of material on digital computers and microprocessors and their use in control system design. Basically, the book is designed as a beginning text in the analysis and control of dynamic systems for students and engineers whose backgrounds are not in electrical engineering.

**Contents:** Introduction. Mathematical description of system components. Analogue computers and system simulation. Transient response of systems. State space representation and analysis. Frequency response of systems. Statistical methods for system identification. Feedback systems—accuracy and stability. The root locus method. The sampled-data process. Design of closed loop systems. Appendixes. Index.

**BUNDAY, B.D.**, University of Bradford, *Basic Optimization Methods*. Edward Arnold, Baltimore, 1984, 128 pages. \$14.95.

**Purpose:** This is a beginning text on the subject of parameter optimization requiring only a background in  $n$ -variable calculus. A unique feature of the text is the presentation of algorithms in BASIC for use on microprocessors.

**Contents:** Introduction. (Part I, Unconstrained Optimization) Search methods—function of one variable. Direct search methods—functions of  $n$  variables. Direct search methods—functions of  $n$  variables. Gradient methods. (Part II, Constrained Optimization) general theory. Search methods. Sequential unconstrained optimization.