a logically concise and clear presentation of the foundations of neutron transport theory.

After a brief introduction (Chap. I), the transport equation in coarse-grained phase space is developed in Chap. II including the time evolution for the neutron singlet density, collision terms, and external field effects.

Chapters III and IV are devoted to the neutron nuclear interaction, nuclear and medium effects, respectively. After a careful exposition of the notation the authors discuss radiative capture, elastic scattering, fission and inelastic scattering, and the neutron balance equation in momentum space. In Chap. IV medium effects present in the ideal gas model and crystals are discussed including radiative capture, elastic scattering, and (for crystals) the thermal average.

In Chap. V neutron thermodynamics and the doublet density are examined and a concise discussion of the H theorem and the diffusion approximation is presented.

Overall, this reviewer found this monograph a very refreshing reading and worthwhile piece of work. The authors justifiably neglect a number of effects, such as spin-dependent scattering, n-n interactions, etc., as not being relevant to reactors, but are always careful to note the approximations made. The criticism that "they couldn't have gotten these results without knowing the answer" is wholly unjustified. The List of Symbols is a welcomed addition.

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The Measurement of Time-Varying Phenomena. By E. B. Magrab and D. S. Blomquist, Wiley-Interscience, New York (1971) 338 pp., $16.95.

This book covers both analytical and experimental techniques for the interpretation of time-varying phenomena in the form of electrical signals. As such, it is useful to the practitioners of many fields of science and technology, including nuclear reactor dynamics.

The book begins with consideration of the fundamental concepts of harmonic analysis and noise analysis. (The Fast Fourier Transform is just fleetingly mentioned in the final chapter.) This is followed by a treatment of filters, largely in general terms. The only specific types treated at this point are simple R-C single-section types. The properties of Butterworth, Chebyshev, and linear-phase filters are discussed but no design information is given. Some active filters are briefly considered in the next chapter.

An extensive treatment of amplifiers includes discussion of noise, linearity and dynamic range, input impedance matching, and negative feedback. The operational amplifier is introduced and a number of linear and nonlinear operational-amplifier circuits are covered. The discussion of comparators and Schmitt triggers does not distinguish between the two, although the hysteresis of the latter is mentioned in a later chapter. Analog multiplication is discussed in terms of the quarter-square multiplier, but there is no mention of the many commercial multiplier modules available, including the inexpensive monolithic units that are suitable for relatively undemanding applications. Chopper-stabilized dc amplifiers and regulated power supplies are briefly discussed, but current amplifiers of the type used with ionization chambers are not mentioned.

The next chapter considers various types of voltage detectors, including peak, average, RMS, and phase-lock types. Squaring-circuit and thermocouple RMS detectors are discussed, but the possibility of using multiplier modules for this purpose is not mentioned. Neither is there mention of the idealized-diode operational-amplifier circuit as a corrective for diode imperfections in linear detectors.

Following this is a discussion of various types of data recorders, including mechanical oscillographs, cathode-ray oscilloscopes and their associated circuitry, and magnetic-tape recording, both analog and digital. The next chapter covers generators of sinusoidal, pulse, and random-noise waveforms for system excitation. There is no mention of the pseudorandom-square-wave method. The voltage-to-frequency converter is discussed but only in terms of the voltage-controlled oscillator. There is no mention of the important type in which an analog integrator charges up to a discriminator level and is set back by a standardized pulse. Furthermore, the explanation in the next chapter of the voltage-to-frequency-converter type of digital voltmeter is incorrect.

The final chapter covers digital techniques and includes discussions of the principles of sampling, binary coding, quantization, and digital logic. It also describes the workings of various digital devices including analog-digital converters, counters, digital voltmeters, and small computers.

The book ends with a glossary and with appendices covering decibel notation, ground loops, and the matching of signal sources to amplifier inputs.

This book will be quite useful as a starting point for the person wishing to learn how to apply these techniques to his own field. It gathers together a wide variety of material normally covered in many different places. A great variety of practical examples enhance the presentation. However, proper understanding requires at least a rudimentary knowledge of electronics.

On the other hand, this is a small book covering a large area, so the reader will have to consult additional sources for more detail, either to aid in understanding unfamiliar concepts or to assist in implementing a practical application. The bibliography is somewhat limited and many of the entries are manufacturers' bulletins.

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