6[K, X]. V. V. SOLODOVNIKOV, *Introduction to the Statistical Dynamics of Automatic Control Systems*, Translation edited by John B. Thomas and Lotfi A. Zadeh, Dover Publications, New York, 1960, xx + 307 p., 20 cm. Price $2.25 (Paperbound).

This book, first published in Russian in 1952, gives an excellently written, self-contained account of the principles of the analysis of linear systems, the statistics of random signals, and the theory of linear prediction and filtering. The translation is well done. In addition to treating exact methods, the author discusses methods of obtaining approximate solutions to various problems.

The first three chapters are devoted to a discussion of the theory of the transients in a linear system produced by deterministic signals, to the elements of probability theory, and to the basic concepts of the theory of stationary random processes.

Chapter IV discusses the criterion of least mean-square error. Linear and square-law detectors are used to show how some nonlinear systems may be treated.

In Chapter V the problem of using numerical methods to approximate spectral distribution curves is treated.

Chapters VI, VII, and VIII contain the derivation and application of formulas from which one may obtain the transfer function yielding a minimum mean-square error from the knowledge of the spectral densities of the signal and noise. The last of these chapters treats the case where the signal is composed of two parts, one deterministic and one random.

The book contains four appendices. Appendix I consists of five-place tables of the functions $\frac{\sin x}{x}$ and $\frac{\cos x}{x}$ for $x = 0(.01)10.0(.1)20(1)100$. Appendix II contains tables of the first five Laguerre functions to five significant figures for values of the argument in the range 0(.01)1.0(.1)20(1)30. Appendices IIIa and IIIb give five-place tables for the calculation of the so-called phase characteristic function from straight-line approximations of the logarithm of the spectral-density function. Appendix IV gives a table of integrals

$$I_n = \frac{1}{2\pi j} \int_{-\infty}^{\infty} \frac{G_n(jw)}{H_n(jw)H_n(-jw)}\, dw, \quad n = 1(1)7,$$

where

$$G_n(jw) = b_0(jw)^n + b_1(jw)^{n-1} + \cdots + b_n\,,$$
$$H_n(jw) = A_0(jw)^n + A_1(jw)^{n-1} + \cdots + A_n\,,$$

and all roots of $H_n(jw)$ are in the upper half-plane.

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7[L]. DAVID J. BENDANIEL & WILLIAM E. CARR, *Tables of Solutions of Legendre's Equation for Indices of Nonintegral Order*, University of California Lawrence Radiation Laboratory, Livermore, UCRL-5859, September, 1960, 68 p., 28 cm. Available from the Office of Technical Services, Washington 25, D. C. Price $1.75.

We employ the usual notation for hypergeometric and Legendre functions [1]. Let

$$f_1(x) = {}_2F_1(-\nu/2, \nu/2 + \tfrac{1}{2}; \tfrac{1}{2}; x^2); \quad f_2(x) = x\,{}_2F_1(\tfrac{1}{2} - \nu/2, 1 + \nu/2; 3/2; x^2).$$