tive transformation matrices S and M, used to determine the "natural" parameters directly from the data without using an orthogonal polynomial fit first, and (3) tables to aid in determining the predicted value of the independent variable and its variance. These tables also cover the range $n = 3(1)20$, $k = 1(1)\min(n, 4)$.

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44[8].—CHARLES E. LAND, *Tables of Critical Values for Testing Hypotheses about Linear Functions of the Normal Mean and Variance*, Department of Statistics, Oregon State University, Corvallis, Oregon 97331, ms. of 4 typewritten pp. and 59 computer sheets deposited in the UMT file.

These unpublished tables constitute an appendix to a paper that is published elsewhere [1].

The critical values define the uniformly most powerful unbiased level α tests of hypotheses H_θ: $\mu + \lambda\sigma^2 = \theta$, where λ and θ are arbitrary numbers and μ and σ^2 are the mean and variance of a normal distribution, against one-sided (Table 1) and two-sided (Table 2) alternatives.

The critical value $t(\nu, \xi, \alpha)$ given in Table 1 is the αth quantile of the distribution with density proportional to

$$f_\nu(t \mid \xi) = (\nu + t^2)^{-(\nu+1)/2} \exp\{(\nu + 1)\xi t/(\nu + t^2)^{1/2}\}.$$

The tabulation is to 3D for $\alpha = .0025, .005, .01, .025, .05, .1, .25, .50, .75, .90, .95, .975, .99, .995$, and $.9975$; $\xi = 0(.1).5(.25)2(.5)5(1)10(2)20(5)50(10)100$; and $\nu = 2(1)10(2)20(5)50(10)100(20)200(50)500(100)1000$.

The two-sided critical values $t_1(\nu, \xi, \alpha)$ and $t_2(\nu, \xi, \alpha)$ satisfy the two equations

$$\int_{t_1}^{t_2} f_\nu(t \mid \xi)\, dt = (1 - \alpha) \int_{-\infty}^{\infty} f_\nu(t \mid \xi)\, dt,$$

$$\int_{t_1}^{t_2} t(\nu + t^2)^{-1/2} f_\nu(t \mid \xi)\, dt = (1 - \alpha) \int_{-\infty}^{\infty} t(\nu + t^2)^{-1/2} f_\nu(t \mid \xi)\, dt.$$

They are given to 3D in Table 2 for $\alpha = .005, .01, .02, .05, .1, .2$, and $.5$; $\nu = 2(2)20(10)100$; and the same range of ξ as in Table 1 except for increasing omissions of small positive ξ, beginning at $\nu = 6$.

Details of the methods used in calculating these tables on a CDC 3300 system are supplied by the author in a four-page introduction.

J. W. W.

1. C. E. LAND, "Confidence intervals for linear functions of the normal mean and variance," *Ann. Math. Statist.*, v. 42, 1971. (To appear.)