has the indicated prerequisites can readily gain an introduction to the theory and applications of Markov processes.

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70 [K].—R. E. BECKHOFER, SALAH ELMAGHRABY & NORMAN MORSE, "A single-sample multiple-decision procedure for selecting the multinomial event which has the highest probability," *Ann. Math. Statist.*, v. 30, 1959, p. 102–119.

Consider N k-nomial trials whose cell probabilities satisfy $p_1 = \cdots = p_{k-1} = p_k/\theta^*$. We select that cell into which the most events fall, breaking a tie at random if it occurs. The authors give a 5D table of the probability of selecting cell k, for $k = 2, 3, 4$; $\theta^* = 1.02(.02)1.1(.1)2(.2)3, 10$; and $N = 1(1)30$. An approximation is developed and compared with these values.

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71 [K].—K. G. CLEMANS, "Confidence limits in the case of the geometric distribution," *Biometrika*, v. 46, 1959, p. 260–264.

The author obtains confidence limits for estimating m, the expected number of trials before a device fails, given the sample mean $\bar{x}$, and N, the number of devices. If N devices each are from an identical geometric distribution, the distribution of sample sums will follow a Pascal distribution. Two log-log charts are provided for two-sided 90% and 98% confidence limits for m, $1 \leqq \bar{x} \leqq 10{,}000$, and $N = 2, 5, 10, 15, 20, 30, 50, 100$. The charts are based on the exact distribution. For $\bar{x} > 10{,}000$, formulas and tables may be used to determine the confidence limits. For large $N > 100$ a special formula is given. Alternatively for large N, since sample means are approximately normal, confidence limits for m may be found as solutions of the quadratic equation obtained from $t = \sqrt{N}(\bar{x} - m) \div m(m + 1)$, where t is the usual normal deviate for the α percent point.

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72 [K].—E. T. FEDERIGHI, "Extended tables of the percentage points of Student's t-distribution," *J. Amer. Statist. Assn.*, v. 54, 1959, p. 683–688.

The author states that in using Student's t-distribution in testing component parts a need for extending the table of upper percentage points was revealed. The method of calculation of these percentage points is presented, and a table containing these results is given. Let y_t be the elementary density for Student's t with n degrees of freedom, and denote $\int_{t_0}^{\infty} y_t \, dt$ by P. The values of t_0 are given to 3D for $P =$ .25, .10, .05, .025, .01, .005, .0025, .001, 5×10^{-4}, 25×10^{-5}, 1×10^{-4}, 5×10^{-5}, 25×10^{-6}, 1×10^{-5}, 5×10^{-6}, 25×10^{-7}, 1×10^{-6}, 25×10^{-8}, 1×10^{-7}, and $n = 1(1)\ 30\ (5)\ 60(10)\ 100, 200, 500, 10^3, 2 \times 10^3, 10^4$, and ∞. It would have been advantageous had the large values of n been arranged conveniently for harmonic interpolation, such as $n = 60, 120, 240, 480, 960$, etc.

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73[K].—Irwin Guttman, "Optimum tolerance regions and power when sampling from some non-normal universes," *Ann. Math. Statist.*, v. 30, 1959, p. 926–938.

This paper is concerned with obtaining β-expectation tolerance regions which are minimax and most stringent (see [1] and [2]) for the upper tail of the single exponential population and for the central part of the double exponential distribution. The single exponential probability density function (*pdf*) is of the form $\sigma^{-1} \exp[-(x - \mu)/\sigma]$ with $x \geqq \mu$, where one or both of μ and σ are unknown. The double exponential *pdf* is of the form $(2\sigma)^{-1} \exp(- \mid x - \mu \mid/\sigma)$, where μ is known and σ is unknown. The sample values are $x_1 < \cdots < x_n$; $\bar{x} = \sum_{i=1}^{n} x_i/n$; $s = \sum_{i=2}^{n} (x_i - x_1)/(n - 1)$; μ_0 and σ_0 represent known values of μ and σ; $t = \sum_{i=1}^{n} \mid x_i - \mu_0 \mid$. Then the optimum tolerance intervals, which are easily identified with the situations considered, are $[a_\beta(\bar{x} - \mu_0), \infty)$, $[x_1 - b_\beta \sigma_0, \infty)$, $[x_1 - c_\beta s, \infty)$, and $[\mu_0 - d_\beta t, \mu_0 + d_\beta t]$. Tables I–IV contain 6D values of a_β, b_β, c_β, d_β, respectively, for $n = 1(1)20, 40, 60$ and $\beta = .75, .90, .95, .99$. The power of tolerance intervals is expressed in terms of parameter α_1, where α_1 is determined as the solution of $(\alpha\sigma)^{-1} \int_{I(\beta)} \exp[-(x - \mu)/\alpha\sigma\, dx = \gamma =$ measure of desirability, for the single exponential case, and from $(2\alpha\sigma)^{-1} \int_{I(\beta)} \exp(-\mid x - \mu \mid \alpha\sigma)\, dx = \gamma$ for the double exponential case. Here $I(\beta)$ is the tolerance interval considered and $0 < \gamma < 1$ (large values indicate greatest desirability). Tables V, VI, and VIII contain 7D values of the power for intervals $[a_\beta(\bar{x} - \mu_0), \infty)$, $[x_1 - b_\beta \sigma_0, \infty)$, $[\mu_0 - d_\beta t, \mu_0 + d_\beta t]$, respectively, for $n = 1(2)7, 10, 15, 30, 60$, and $\beta = .75, .90, .95, .99$; likewise for $x_1 c_\beta s$ and Table VII, except that $n = 2(2)10, 15, 30, 60$.

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1. D. A. S. Fraser & Irwin Guttman, "Tolerance regions," *Ann. Math. Statist.*, v. 27, 1956, p. 162–179.
2. Irwin Guttman, "On the power of optimum tolerance regions when sampling from normal distributions," *Ann. Math Statist.*, v. 28, 1957, p. 773–778.

74[K].—Milos Jilek & Otakar Likar, "Coefficients for the determination of one-sided tolerance limits of normal distribution," *Ann. Inst. Statist. Math. Tokyo* v. 11, 1959, p. 45–48.

It is well known that a random sample of size N from a normal universe with mean μ and variance σ^2 yields one-sided tolerance limits $(-\infty, T_u)$ and $(T_L, +\infty)$ each of which includes at least a fraction α of the universe with probability P, where

$$T_u = \bar{x} + ks,$$

$$T_L = \bar{x} - ks,$$