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ABSTRACTS OF PAPERS

(Abstracts of papers to be presented at the Annual meeting, Washington, D.C., December 27–30, 1967. Additional abstracts appeared in the June, August, October, and December issues.

32. Stochastic point processes on topological spaces. ROBERT A. AGNEW, Northwestern University.

A stochastic point process can be considered roughly as a random collection of countably many points from some underlying space. Goldman [*Ann. Math. Statist.* **38** (1967) 771–779] has obtained a variety of interesting results for point processes on n-dimensional Euclidean space, his work being a significant departure from the highly structured real line, where a large body of theory already exists. Motivated by Goldman's work, we investigate point processes on a locally compact Hausdorff space. The operations of superposition and decomposition are characterized, and some general inversion theorems are obtained. Further, it is demonstrated that these results hold for more general stochastic processes with an abstract parameter space. Finally, point processes on a sigma-compact, locally compact Abelian topological group are investigated. Stationary and uniform point processes are characterized, and some translation theorems are obtained. The Bernoulli and Poisson processes are characterized on countable and uncountable groups respectively. (Received 16 October 1967.)

33. Multidimensional partially balanced designs for models containing interaction terms (preliminary report). DONALD A. ANDERSON, University of Wyoming. (By title)

Consider an experiment involving m factors $F_1, F_2, \cdots, F_m$ where factor F_i has s_i levels, say $S_i = \{F_{i1}, F_{i2}, \cdots, F_{is_i}\}$, $i = 1, 2, \cdots, m$. Let $S_{ij} = S_i \times S_j$ and define the class of sets $\mathcal{C}$ so that $S_{ij} \varepsilon \mathcal{C}$ iff factors F_i and F_j interact and $S_k \varepsilon \mathcal{C}$ iff factor F_k does not interact with any other factor. The definition of the multidimensional partially balanced (MDPB) design for the additive model, [Bose and Srivastava, *Sankhyā* **26** (1964)] has been extended to include models containing interaction terms where a MDPB association scheme is defined on $\mathcal{C}$. It is shown that if the direct product association scheme is defined on $\mathcal{C}$ then MDPB designs must be simple direct products of connected PB designs, e.g., in a four-dimensional design with interactions F_1F_2 and F_3F_4 we have $T = T_{13} \times T_{24}$ where T_{13} and T_{24} are PB designs involving factors (F_1, F_3) and (F_2, F_4), respectively. Three- and four-dimensional designs for models containing one interaction term and four-dimensional designs for the model with two interaction terms discussed above are obtained by mapping the elements of the sets of $\mathcal{C}$ onto the elements of sets in a class $\mathcal{D}$ on which a MDPB association scheme is defined. These designs are more economic than the direct product designs and are also MDPB under the model restricted by the hypothesis that one or more of the interaction terms are zero. (Received 6 November 1967.)

34. Estimation through preliminary test estimators. JESSE C. ARNOLD and S. K. KATTI, Florida State University.

This paper investigates the problem of using a preliminary test to select an estimator of an unknown parameter, from a set of estimators of interest. For the case of two estimators, say $\hat{\theta}_1$ and $\hat{\theta}_2$, our procedure is basically as follows: We construct regions R and $\bar{R}$ such that the MSE$(\hat{\theta}_1 \mid \theta) \leqq$ MSE $(\hat{\theta}_2 \mid \theta)$ if $\theta \varepsilon R$, and $\bar{R}$ is the complement of R. If $\hat{\theta}_1 \varepsilon R$, we use $\hat{\theta}_1$ as the estimator of θ, and if $\hat{\theta}_1 \varepsilon \bar{R}$, $\hat{\theta}_2$ is selected as the estimator. The partition $(R, \bar{R})$ was