COMPARISON OF NORMAL LINEAR EXPERIMENTS BY QUADRATIC FORMS

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(Received February 5, 1996; revised September 11, 1996)

Abstract. Let X and Y be observation vectors in normal linear experiments $\mathcal{E} = \mathcal{N}(A\beta, \sigma V)$ and $\mathcal{F} = \mathcal{N}(B\beta, \sigma W)$. We write $\mathcal{E} \succ \mathcal{F}$ if for any quadratic form $Y'GY$ there exists a quadratic form $X'HX$ such that $E(X'HX) = E(Y'GY)$ and $\mathrm{var}(X'HX) \leq \mathrm{var}(Y'GY)$. The relation $\succ$ is characterized by the matrices A, B, V and W. Moreover some connections with known orderings of linear experiments are given.

Key words and phrases: Normal linear experiment, comparison of experiments, sufficiency, linear sufficiency, quadratic sufficiency.