

# ASYMPTOTICALLY EFFICIENT RANK MANOVA TESTS FOR RESTRICTED ALTERNATIVES IN RANDOMIZED BLOCK DESIGNS

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**Abstract.** In a randomized block design MANOVA model, for intra-block as well as aligned rank tests for homogeneity of treatment effects against some restricted alternatives, asymptotic optimality is studied by reference to the corresponding restricted likelihood ratio tests. Tests based on aligned ranks are better than intra-block rank tests when the error distributions are homogeneous across the blocks.

*Key words and phrases:* Intra-block ranking, Kuhn-Tucker-Lagrange point formula, locally most powerful rank test, randomized blocks, ranking after alignment, restricted likelihood ratio tests, union-intersection (UI-) principle.