STATISTICAL INFERENCE BASED ON ALIGNED RANKS FOR TWO-WAY MANOVA WITH INTERACTION

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Abstract. Multiresponse experiments in two-way layouts with interactions, having equal number of observations per cell, are considered. Robust procedures based on aligned ranks for statistical inference of interactions, main effects and an overall mean response in the models are proposed. Large sample properties of the proposed tests, estimators and confidence regions as the cell size tends to infinity are investigated. For the univariate case, it is found that the asymptotic relative efficiencies (ARE's) of the proposed procedures relative to classical procedures agree with the ARE-results of the two-sample rank test relative to the t-test. In addition, robustness due to Huber (1981, *Robust Statistics*, Wiley, New York) can be drawn.

Key words and phrases: Asymptotically distribution-free procedure, multivariate analysis, test, point estimate, confidence region, asymptotic efficiency, robustness.